DOCUMENT RESUME

ED 213 240 EC 141 197

AUTHOR Dow, Ian I.; And Others
TITLE Manual for Teachers of Students with Learning Disabilities.
INSTITUTION Ontario Dept. of Education, Toronto.
REPORT NO ISBN-0-7743-6732-6
PUB DATE 81
NOTE 507p.
AVAILABLE FROM Publications Centre, 880 Bay St., 5th Floor, Toronto, Ontario M7A 1N8 Canada ($15.00).

EDRS PRICE MF02/PC21 Plus Postage.
DESCRIPTORS Adolescents; Elementary Secondary Education; *Handicap Identification; Handwriting; *Learning Disabilities; *Mainstreaming; Mathematics; *Remedial Instruction; Remedial Reading; Spelling; *Teaching Methods

ABSTRACT

The manual is intended to provide regular teachers with the information, methods, and techniques needed to deal more effectively with a learning disabled child in the regular classroom. The introduction examines the general syndrome of learning disability (LD) with emphasis on two identification components: exclusion, in which all other handicapping conditions must be discounted as causes of the learning problem; and discrepancy, in which a child must exhibit discrepancies among abilities. Chapter 1 examines the process of identification, how LD affects various areas of development, the importance of early identification, and how teachers can develop their own diagnostic/assessment procedures. The second chapter presents several effective approaches to teaching, programing alternatives, and classroom management. Considered next are the unique problems presented by the LD adolescent including characteristics of the LD adolescent, effect of the problem on the child's overall development, and appropriate teaching strategies. The final chapter is devoted to an overview of remedial procedures specific to each of four subject areas--reading, spelling, handwriting, and mathematics. Appendixes include materials in the following areas: guidelines for identifying the LD child, informal evaluation, developing perceptual motor skills, materials for teaching the adolescent student, tools for teaching reading, a listing of Grade 3 spelling words rearranged according to phonic elements and generalizations, tools for teaching handwriting, and tools for teaching mathematics. Also included are a list of tests, a list of materials (organized by grade level), and a glossary of terms in the field of learning disability. (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED213240

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

MANUAL FOR TEACHERS OF STUDENTS WITH LEARNING DISABILITIES

IAN I. DOW, Principal Investigator
ROBERT R. O'REILLY, Project Director
MARGARET R. HILL
ANN M. DOSTALER

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

B M Hildebrand

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Hon. Bette Stephenson, M.D., Minister
Harry K. Fisher, Deputy Minister

EC141197

© The Minister of Education, Ontario, 1981
Queen's Park
Toronto, Ontario

ONTARIO MINISTRY OF EDUCATION CATALOGUING IN PUBLICATION

Dow, Ian I.
Manual for teachers of students with learning disabilities / Ian I. Dow, principal investigator ...[et al.]. —

"This project was funded under contract by the Ministry of Education, Ontario."

1. Learning disabilities - Handbooks, manuals, etc. I. Ontario. Ministry of Education. II. Title.

ON01907 371.9 UTLAS: 54017007

ISBN 0-7743-6732-6

Additional copies may be ordered from:

Publications Sales
The Ontario Institute for Studies in Education
252 Bloor Street West
Toronto, Ontario
M5S 1V6

or from:

Ontario Government Bookstore
880 Bay Street
Toronto, Ontario
M7A 1N8

(mail orders)
Publications Centre
880 Bay Street, 5th Floor
Toronto, Ontario
M7A 1N8

(Cheques should be made payable to the Treasurer of Ontario.)

PREFACE

This manual follows an in-depth study of the programs and services provided for learning-disabled (LD) students throughout Ontario. One of the major recommendations included in that report concerns the need for classroom teachers to improve their expertise in the area of LD. It is suggested that one of the most effective means of improving services to these students is to provide classroom teachers with the knowledge and skills which would enable them to recognize the symptoms of LD, to respond to the needs of lesser severe cases in the mainstream, and to communicate more efficiently with special education personnel.

LD is one of the most pressing problems challenging educators today. Lacking any rational order at the level of research and theory, it is often difficult for specialists to transmit any coherent system of knowledge to practitioners in the field. While teachers interested in increasing their understanding of LD have an abundance of literature to refer to, the divergent opinions offered in the literature are often difficult to reconcile with the immediate reality of a child within the classroom.

Thus, while this manual cannot purport to close the gap between educational theory and practice, it does seek to present the current state of LD knowledge in terms which are understandable to the non-specialist. Specifically, the purpose of this handbook is to provide information, methods, and techniques which can assist the classroom teacher to deal more effectively with a learning disabled child in the regular classroom. In doing so, it should be noted that while a very basic distinction between "learning difficulty" and "learning disability" is herein recognized, the manual contains information which may be used to overcome all impediments to learning. While the manual is addressed primarily to the problem of LD, teachers will find that it provides information which is relevant to all types of learning problems.

In the introduction, the non-specialist is introduced to the general syndrome of LD. Two important considerations in identification are cited: exclusion, in which all other handicapping conditions must be discounted as causes of LD; and discrepancy, in which a child must exhibit discrepancies among abilities.

Chapter I examines the process of identification: how LD affects various areas of development, i.e. how symptoms are manifest in a child's learning performance; the importance of early identification, and how teachers can develop their own diagnostic-assessment procedures.

The second chapter, Principles of Instruction, presents several effective approaches to teaching, programming alternatives, and classroom management.

Chapter III calls attention to the unique problems presented by the learning disabled adolescent. Consideration is given to the characteristics of the LD adolescent, the effect of the problem on the child's overall development, and appropriate teaching strategies. It also includes a section which deals with programming for the secondary student.

The final chapter is devoted to an extensive overview of remedial procedures specific to each of four subject areas - reading, spelling, handwriting, and mathematics. It contains valuable information, in the form of specific strategies and techniques, to guide teachers in assisting a child to overcome difficulties in a particular subject area.

For each subsection of each chapter, there follows a list of references which may be used by teachers to further explore a topic of interest.

Special attention must be given to the appendices which accompany the manual, for it is here that teachers will find materials that are of immediate value in classroom situations.

Appendix I, for example, provides guidelines for identifying the LD child, and includes the following:

1) a list of questions teachers can use to determine the level of development of a child entering kindergarden,

2) a list of specific behavioural observations to determine whether a kindergarden child should be referred for further assessment,
3) "general indicators" of potential problems in the young child,
4) a list of questions to determine a child's reading readiness,
5) a checklist of perceptual problems that are manifest in classroom achievement, and
6) the Rhode Island Pupil Identification Scale, which permits the teacher to establish a child's comparative level of functioning, and to identify certain distinctive problems.

Similar materials are included in appendices dealing with informal evaluation, teaching the adolescent, and tools for teaching each of reading, spelling, handwriting, and mathematics.

There follows a "List of Tests", which includes both group and individual diagnostic and acheivement tests. The names and addresses of all publishers and distributers are also listed.

Teachers are furthermore encouraged to refer to the "List of Materials", in which materials are organized into four groups: materials for the young child, and for primary, junior, and secondary level students.

Finally, the manual includes a glossary of terms, which may be used to clarify the expansive terminology that has evolved in the field of LD.

TABLE OF CONTENTS

Chapter		Page
	Preface	i
	Table of Contents	vi
	List of Appendices	viii
	INTRODUCTION	1
I.	THE PROCESS OF IDENTIFICATION	9
	1. The Manifestation of Learning Disabilities	10
	2. Early Identification of Learning Needs	28
	3. Diagnostic Assessment Procedures	52
II.	PRINCIPLES OF INSTRUCTION	71
	1. Teaching Strategies	72
	2. Classroom Management	96
III.	THE LEARNING DISABLED ADOLESCENT	118
	1. Special Needs of the Adolescent	119
	2. Programming for the Adolescent Student	135

Chapter Page

IV. REMEDIAL PROCEDURES. 160
1. Reading. 161
2. Spelling 237
3. Handwriting. 265
4. Mathematics. 286

LIST OF TESTS. 464

LIST OF MATERIALS. 471
1. Materials for Teaching the Young Child . 472
2. Materials for Teaching Primary Grade Children 474
3. Materials for Teaching Junior Grade Children 479
4. Materials for Teaching Secondary Level Students 483

GLOSSARY OF TERMS. 485

LIST OF APPENDICES

Appendix Page

I. GUIDELINES FOR IDENTIFYING THE LEARNING DISABLED CHILD. . 317

A. Kindergarten Interview 318

B. Identifying LD Kindergarten Children 320

C. General Indicators 321

D. Assessing Readiness. 325

E. Perceptual Problems. 326

F. The Rhode Island Pupil Identification Scale. . 329

II. INFORMAL EVALUATION 332

A. Informal Assessment Techniques with LD Children 333

B. Informal Diagnostic Procedures: "What can I do Before the Psychometrist Arrives?" 354

III. DEVELOPING PERCEPTUAL MOTOR SKILLS 359

IV. MATERIALS FOR TEACHING THE ADOLESCENT STUDENT 371

A. Guidelines: Special Education for Learning Disabled Students in the Secondary Schools 372

B. Books of High Interest and Low Vocabulary Level for Intermediate Students 378

Appendix Page

V. TOOLS FOR TEACHING READING 386

A. Barbe Reading Skills Checklist. 387

B. Dolch's List of 220 Basic Sight Words and 95 Commonest Nouns 394

C. A Brief Outline of Phonic and Structural Skills. 407

D. Remedial Reading Checklist of Skills. . . . 410

VI. DENT SPELLER (GRADE 3) - REARRANGED ACCORDING TO PHONIC ELEMENTS AND GENERALIZATIONS 413

VII. TOOLS FOR TEACHING HANDWRITING 419

A. Suggestions for Improving Handwriting . . . 420

B. Handwriting Exercises 423

VIII. TOOLS FOR TEACHING MATHEMATICS 455

A. The Tachistoscope 456

B. Pupil Reference Cards
   1. Addition or Subtraction 458
   2. Multiplication or Division. 459

C. Timed Oral Practice Sheets. 460

D. Addition Chart. 463

INTRODUCTION

Educators have long since recognized that exceptional children defy classification. Indeed, no child fits neatly into a category, based on uniform learning characteristics. While there are certainly similarities to be found in any group of exceptional children, in terms of special education needs, the one outstanding characteristic is their intra-individual differences.

Mentally retarded children are not equal in intellectual ability; hearing impaired children have differing degrees of hearing loss; speech problems are numerous and varied, just as children who are blind, gifted, or physically impaired, are heterogeneous in terms of learning abilities and needs.

Despite this fact, the inter-individual differences of most children with special needs are sufficient to allow educators to specify certain criteria to be met for each traditional category of exceptionality. There are many children, however, who experience school failure, yet satisfy none of the criteria of traditional categories. Recently, the term learning disability (LD) has evolved to encompass this highly heterogeneous group of children.

These are children who are not blind, deaf, physically handicapped, mentally handicapped, nor emotionally disturbed, yet are unable to profit from regular instruction.

As Kirk and Gallagher (1979) explain,

> "A substantial number of children show retardation in learning to talk, do not acquire other communication skills, do not develop normal visual or auditory perception, or have great difficulty in learning to read, to spell, to write, or make arithmetic calculations. Some of them are not receptive to language but are not deaf, some are not able to perceive visually but are not blind, and some cannot learn by ordinary methods of instruction but are not mentally retarded" (p. 281).

What is a learning disability and how can it be recognized in the classroom?

Though teachers may be acutely aware of the problems manifest by such a child, the concept itself is one that is often difficult to explain. As Kirk and Gallagher point out,

> "... because the field has been of interest to educators, psychologists, neurophysiologists, pediatricians, opthalmologists, optometrists, speech pathologists, and others, the problems have been viewed in each of these disciplines

from a different perspective" (p. 281).

As a result, some specialists contend that LD is related to central nervous system (CNS) dysfunction, and employ terms such as brain injury, minimal brain dysfunction, or psychoneurological learning disability.

Others contend that LD is caused by perceptual disorganization, and speak of perceptual dysfunctions, or process deficits. Still others advocate that regardless of cause, LD should be understood in terms of behavioural symptoms and educational needs.

Further to the fact that there are widespread differences in interpretations of LD, is the fact that there are numerous types of LD. More than any other category of exceptionality, LD children are characterized by intra-individual differences, each of which require a unique diagnosis and remedial approach.

According to the U.S. Office of Education (Federal Register, December 29, 1977), LD may occur in any of seven areas:

1. oral expression
2. listening comprehension
3. written expression
4. basic reading skills
5. reading comprehension
6. mathematical calculation
7. mathematical reasoning

For practical purposes, Kirk and Gallagher (1979) more simply divide LD types into two broad groups:

1. Academic disabilities, which refer to school performances that fall below the level reasonably expected of a particular child. These include failure in academic performance in reading, writing, spelling, and arithmetic.
2. Developmental learning disabilities, which may be referred to as the lack of prerequisite skills. Though they are not as readily observed as school performance, they often underlie difficulties in the academic subjects. They include: 1) disorders of attention, 2) perceptual and expressive disorders, 3) limited use of the mental operations of memory, seeing relationships, generalizing, associating, and so forth, and 4) language disorders, including a limited ability to decode and encode concepts, either verbal or motor (p. 290).

The link between the two is illustrated, for example, in learning to read, which relies on the prerequisite skills of visual and auditory discrimination and visual and auditory memory.

How then, can children with academic or developmental learning disabilities be recognized? Initially, children with learning disabilities come to the attention of teachers for a number of reasons. Clements (1966) and Bryan and Bryan (1975) have listed ten behavioural characteristics of learning disabilitites which may be observed in the regular classroom:

1. Hyperactivity (motor behaviour which is more than demanded by the task).
2. Perceptual-motor impairments (difficulty coordinating a visual or auditory stimulus with a motoric act such as copying letters of the alphabet).
3. Emotional instability (emotional outbursts which are not reasonably expected on the basis of the situation).
4. General coordination deficits (clumsiness).
5. Disorders of attention, such as distractibility (concentration) and perservation (inability to change focus).
6. Impulsitivity (reflect little thinking concerning consequences).
7. Disorders of memory.
8. Specific learning disabilities (reading, arithmetic, writing, spelling).
9. Difficulty in comprehending or remembering spoken language or disorders of speech or hearing, as mentioned by Clements.
10. Equivocal neurological signs (signs not clearly associated with particular neurological problems but which are clearly

not within the normal range of function).

Unlike other handicapping conditions, the confusion of the field makes it difficult to establish any precise criteria for identification, as by a numerical score such as IQ. or a decibel loss. There are, however, two general criteria which can be used to guide a teacher in the regular classroom, and which reflect the major characteristics that are common to all LD children.

The first is generally referred to as the exclusion factor. In other words, does the child have a specific learning disability, or is the problem related to conditions such as mental retardation, visual impairment, hearing impairment, sensory or motor disability, emotional disturbance, inadequate instruction, cultural disadvantage, or environmental deprivation? To exclude these factors as causes of the learning difficulty requires that consideration be given to all aspects of the child's development, i.e. should hearing and/or visual ability be examined? Is the child culturally deprived? Is the home environment a disruptive influence? Has attendance been irregular? etc...

The second LD criteria which must be considered is called the discrepancy component. As Kirk and Gallagher (1979) state, "Although such children form a heterogeneous group and fail to learn for diverse reasons, they have one thing in common;

developmental discrepancies in abilities and achievements (p. 281). A teacher may note that there is a basic discrepancy between performance and potential; that the child is simply performing at a level below his apparent capacity, or the child may clearly demonstrate discrepancies in abilities; reading achievement may be above average; though s/he is failing math; or oral language skills are superior, while written expression presents a serious problem.

Discrepancy is the one most important characteristic in differentiating the LD child from those who fail to learn because of low intelligence, emotional disturbance, or any other handicapping condition. The poor learning ability of the latter group is generalized, in contrast to the LD child, whose learning problems are specific to one area.

If these two criteria are satisfied, it is the responsibility of the teacher to further investigate the problem, and determine how the regular instructional program should be modified to meet the needs of the child.

REFERENCES

Bryan, T. and Bryan, J. Understanding Learning Disabilities. Port Washington, N.Y. Alfred Publishing Co., Inc., 1975.

Clements, S. D. Minimal Brain Dysfunctions in Children. Phase I of a Three-Phase Project. NINBD Monograph No. 3, U.S. Department of Health, Education, and Welfare, 1966.

Federal Register, 1977 "Procedures for Evaluating Specific Learning Disabilities" 42(250)(December 29): Section 121a 541. Department of Health Education and Welfare, U.S. Office of Education.

Kirk, S. A., and Gallagher, J. J. Educating Exceptional Children. Boston: Houghton-Mifflin Co., 1979.

CHAPTER I

THE PROCESS OF IDENTIFICATION

1. THE MANIFESTATION OF LEARNING DISABILITIES

Further to a theoretical understanding of the syndrome of learning disabilities, a teacher must be able to recognize symptoms exhibited in the classroom. While it is important to know what a learning disability is, it is equally important to know how areas of development are affected, how to indentify symptomatic weaknesses in the child's performance.

Following the suggestions of Clements (1966) and Bryan and Bryan (1975), the following developmental areas will be discussed in terms of the way in which characteristics of learning disabilities are exhibited in each:

1. Motor and/or coordination,
2. Perceptual - motor,
3. Visual perception,
4. Auditory perception,
5. Specific language difficulties,
6. Non-verbal difficulties
    (a) Self concept
    (b) Social perception
    (c) Behaviour
    (d) Orientation and organization.

1. Motor and/or Coordination

Motor problems are divided into two specific areas - gross motor and fine motor. Gross motor difficulties are those which are generally apparent in a child's overall clumsiness. Although gross motor problems make it difficult for a child's successful participation in gymnastics and sports, they are not as devastating academically as fine motor difficulties.

Fine motor difficulties are observable early when a child tries to button up a sweater or tie shoe laces. Later, poor co-ordination results in difficulty with printing and writing. The child has difficulty holding the pencil and controlling the hand movements to cope with colouring, cutting, and printing on and within the lines. Consequently, assigned work may not be completed and what is produced is frequently untidy, often illegible. This becomes a serious problem as students progress into the higher grades, where more and more written work is required, where notes and written examinations are essential.

2. Perceptual - motor

Perceptual - motor refers to the ability to provide the appropriate response to a visual or auditory stimulus. The child is required to make the match between what is perceived and the consequent motoric act. Basic to achieving this match is the child's own body awareness, which is the point of reference for all other movements (Kephart, 1964). As body awareness develops, so does the perception of direction (left - right, up - down) and space (near - far, high - low, wide - narrow, big - little).

Perceptual - motor problems are evidenced in a six-year old child, for example, who is unable to judge the direction of the diagonals in attempting to copy a triangle and thus produces a disjointed or rectangular design.

Perceptual - motor difficulties are most apparent in printing, a task which requires that the child accurately match the visual perception of letters with the motoric act of printing them. Examples include problems of direction: (ɥ for h), or reversals (ɥab for had), and problems of spatial judgement and coordination (oı for a).

3. Visual Perception

Perceptual abilities, according to Frostig and Maslow (1973), develop maximally from 3 1/2 to 7 1/2 years of age and according to Bateman (1977) "two-year old children have enough visual discrimination to learn to read." Despite these stipulations, there are many children who exhibit visual perceptual difficulties in three specific areas - visual discrimination, visual sequencing and visual memory. As visual perception has spatial dimensions, discrimination problems are frequent in distinguishing between b - d, m - w, p - q, no - on, saw - was, etc. Visual sequencing problems are evidenced in an inability to remember the left-to-right order of letters in a word; for example, spot = stop, had = hda, who = hwo, girl = gril, least = laest, etc.

Children with visual discrimination and sequencing problems show many such printing errors in their workbooks.

Another serious visual perceptual problem is that of memory. Poor visual memory contributes to discrimination, sequencing, reading and spelling problems, because the child is unable to develop a constant visual image which can be retrieved accurately and at will. Visual memory problems contribute to slow development of sight reading vocabulary as well as delayed reading ability. Visual memory problems also affect mathematic ability, such as when the child cannot remember how to set up the problem, or where to start.

Since visual perception provides most of the information a child acquires, difficulty in this area can be quite devastating. Moreover, because perception develops largely through the early years, before a child enters school, very early recognition of perceptual difficulties is essential, in order that appropriate intervention may be implemented to overcome difficulties which could be potential stumbling blocks to learning.

4. Auditory Perception

Auditory perception, like visual perception, develops maximally "about the time the child first attends preschool or kindergarten." (Frostig and Maslow, 1973; p 112). Of even greater concern, however, is the fact that auditory perceptual abilities reach their ceiling before a child's ninth birthday.

Auditory perceptual problems may be in the areas of discrimination, sequencing, and/or memory. Discrimination problems are usually apparent in the child's speech. For example, the child says 'hab' for 'have', 'firsty' for 'thirsty' or 'shicken' for 'chicken'. Typically, children with discrimination difficulties are unable to distinguish spoken words: cap - cop, bend - bent, bet - bit, shop - chop, wish - with, picture - pitcher. Similarly, they have difficulties distinguishing the sound elements, b - p, m - n, d - t, f - v, w - th, sh - ch, w - wh. Auditory sequencing problems are also evidenced in a child's spoken language: pasketti for spaghetti, hostipal - hospital, and aminal - animal. When a child has sequencing difficulties in spoken language, it is not surprising that difficulty with the order of sounds is apparent in written language. Since facility in spoken language is dependent on an understanding of the order of words in a sentence, children with auditory sequential difficulties have difficulty acquiring the grammatical structure of language.

Auditory memory refers to the ability to remember what is heard. The child with an auditory memory problem generally has trouble following instructions, especially if several stages are involved. Instructions such as, "Clear off your desks, then take out your spelling books and turn to page 23." may be heard, but are forgotten before they can be followed. Such a child is thus frequently lost and confused in the classroom, never knowing what s/he should be doing, or where to begin.

A child with an auditory memory problem may also have difficulty with sound blending, since sounds must be remembered in their proper order for accurate blending. Auditory memory disorders contribute to poor reading comprehension, as when the child is unable to retain what has been read, and to difficulty in mathematics, in which memory is required for addition, subtraction and multiplication facts and processes.

Predominately, deficits in the area of auditory perceptual processing are manifested in a delayed acquisition of language. Speech problems persist due to inaccurate discrimination and/or sequencing, and there is a lag in the overall development of vocabulary and use of appropriate sentence structure. Since reading is a language skill, auditory perceptual problems generalize as a difficulty to learn to read.

5. Specific language difficulties

Because language is the tool of communication, language difficulties are the most debilitating for a child. There are children who for some reason do not develop language skills at the time or to the degree that is considered average. A child develops the kind of language to which s/he is exposed and according to Frostig and Maslow (1973), "the period of maximum language development" is "from one-and-a-half to about three years of age" (p. 93). It is during this period that a child develops 'inner language', the attachment of meaning to words as represented units of experience (Johnson and Myklebust, 1967) which provides the basis of receptive language skills - the ability to understand and interpret what is said. The child's expressive language, (what s/he says) depends on the development of inner and receptive language.

Receptive language difficulties: Children with receptive language difficulties often appear to be functionally dull because they don't seem to comprehend and are unresponsive to what is said to them. Typically, the child with a receptive language difficulty misinterprets what is said and reacts inappropriately; behaviour is characteristically hyperactive, disinhibited, perseverative, or inattentive. Griffiths (1970) offers the following example of misinterpretation: "When his teacher said to him 'Write your name' he wrote 'Y-o-u-r n-a-m-e'" (p. 76).

Expressive language difficulties: Although receptive and expressive language develop simultaneously, expressive language is dependent on and exceeded by receptive language. In other words a person's receptive vocabulary, or repertoire of words that are understood, is more expansive than one's expressive vocabulary, or words used in speech. Children with expressive language difficulties are unable to recall names or words, to discriminate and sequence sounds or syllables, and are frequently unable to structure words into a sentence to express a thought. When one considers the statement made by De Hirsch (1975) that "verbalizing stabilizes perception" and Frostig (1973) that "language is essential because it assists thought" (p. 93), it brings into focus the magnitude and the insidious nature of an expressive language difficulty.

"Normal children", according to De Hirsch (1975) "show awareness of basic rules during the first years of their lives and they know the expected responses to changes of inflection." When a child hasn't had the stimulation, the environment, or the opportunity to develop adequate language skills, s/he may experience great difficulty in school, where formal language is used in instruction. The child is unable to communicate adequately with peers, responds inappropriately to instruction and has a scant base on which to establish reading skills. As

Hallahan and Cruickshank (1973) point out, "deficiency in either the reception or the production of language would prove especially disabling because of the central role which language plays in psychological development." (p. 101).

6. Non-Verbal difficulties

In addition to difficulties of a verbal nature, many children have non-verbal difficulties, either concomittant with, or as the result of a learning disability. In this category, the areas which must be considered are as follows:

a) Self concept - A child who has learning difficulties is frequently one who fails repeatedly, regardless of effort expended. As a result, such a child frequently has a poor self-concept. The child feels 'dumb', because of an inability to do what other children can do, and often because other children, through subtle gestures or comments, reinforce the child's negative opinion of self. Consequently, the child may become withdrawn or frequently 'acts out' frustrations when the limits of tolerance and patience have been reached.

b) Social perception - Closely related to language difficulties is the problem of social imperception. Children with this type of difficulty do not understand and have failed to learn appropriate behavioural responses. They have difficulty interpreting facial expressions, body gestures, voice tone and inflection, and thus react inappropriately. From personal experience, as a remedial teacher, is the example of a nine-year old girl, who told the principal, "My mother doesn't like you." Even much younger children have enough social perception to avoid this type of comment. In this particular case, social imperception was in addition to the recognized visual and auditory perceptual processing difficulties, experienced in spite of a measured potential in the average range.

c) Behaviour difficulties - Behavioural difficulties include hyperactivity, distractibility, short attention span, aggression, perseveration and emotional outbursts. Though such symptoms are at some time manifest in all children, they are more consistent and persistent in children with specific learning disabilities. The important distinction is that with a learning disability, the child fails to learn at a level commensurate with age and grade, and with estimated potential.

d) Orientation and Organization difficulties - Orientation refers to those elements related to the concepts of space and time. Children with orientation difficulties confuse directional and spatial concepts such as right-left, up-down, high-low, near-far, more-less, etc. Consequently, they have difficulty with letters of the alphabet (b-d and p-q), with numerals (5-Ƨ, 3-Ɛ, 7-Ꞁ, 9-୧) and with calculations in addition, subtraction, measurement, etc.

Children with organization difficulties are typically unable to find their mitts, boots, pencil, book, the right page, where to work on the page. Furthermore, these children fail to develop a methodical approach to a task. This becomes a serious problem for junior and senior high school students, who consistantly manifest an inability to plan work, to organize homework, using the right textbook, the right page, and the right notebook. Assignments present a very difficult task because the child can't organize his thoughts sufficiently to determine what to do, nor how to do it.

Coupled with spatial difficulties are time or temporal difficulties. There are many children who experience extreme difficulty in dealing with time concepts such as how many days in a week? when is Christmas? is Christmas before Hallowe'en? is it lunch time? or recess? Concepts such as before and after, earlier and later are difficult to learn. Children with temporal difficulties are unable to judge how long it will take them to complete a specific task, be it as simple as putting on a coat or as difficult as writing an exam.

A review of the various symptoms of learning difficulties would seem to indicate that all persons have some form of learning difficulty. However, it is important to note that one symptom of difficulty does not constitute a learning disability. A learning disability is a syndrome, or collection of symptoms. The difficulties must be outside the normal range, for a child of a given grade and age level, persist in spite of repeated efforts to correct them, and handicap an otherwise capable child. One writer discribed a learning disability as being "something like a weak link in an otherwise strong chain".

Given this information, how then, should this syndrome be treated? Much emphasis has been placed on the importance of a child's early years - the years before the child enters school and the first two years of school. Parents must be made aware of the responsibility they shoulder in providing the stimulation which will lead a child to optimally develop motoric, visual and auditory perceptual abilities and language, and thus enable the child to benefit from the instruction given in school. There is unanimous agreement among authorities that early recognition and appropriate intervention are essential to prevent early difficulties from developing into major handicaps. Jansky and De Hirsch (1972) point out that "We can no longer afford to wait until children are in trouble. If intervention is to be timely and effective, it is imperative to identify potentially failing readers at the earliest possible age." (p. 1). Vernon (1970) quotes a study by Schiffman which discovered that "if remedial teaching were given at the age of six to seven years, 82 percent of the children learned to read normally; at eight to nine years, 42 percent; at ten to twelve years, only 10 to 15 percent". (p. 5). Such statistics are sufficient evidence to warrant an early intervention plan. Basic to an intervention programme is a means of identification. A screening programme should be developed in accordance with the programme into which the child is entering. If the child is entering kindergarten, s/he should be tested on those competencies considered essential for kindergarten. In first grade, the identification procedure will differ in as much as competencies for first grade differ from competencies for kindergarten. An early identification or screening programme must be carefully monitored and its purposes clearly understood. A screening programme should not be labelled as a procedure for identifying learning disabilities, but rather as a means of identifying potential learning difficulties in the hope that through appropriate remedial teaching or even maturation, the difficulties may be overcome.

Research into the numerous and varied programmes designed to correct or alleviate learning difficulties has provided some rather disconcerting results. Jansky and De Hirsch (1972) frankly state that "Work on the trampoline for older preschoolers who have significant difficulties with oral language processing is a waste of precious time and effort." (p. 118). Articles by Hammill, Goodman and Wiederholt (1974) and Pitcher-Baker (1976) have cast disfavour on the Kephart-Getman (visual-motor learning programme) and the Frostig-Horne (visual-perception learning programme) materials as expressed in the following statements: "the results of attempts to implement the Frostig-Horne materials and the Kephart-Getman techniques in the schools have for the most part been unrewarding." (Hammill et al 1974; p. 476). "The research indicates that the Frostig learning programme in perception has no effect on reading and has a questionable effect on school readiness and perception itself." (Pitcher-Baker 1976; p. 45). The Doman-Delcato programme, as evaluated by Robbins (1966) was viewed as suspect because the "data did not support the postulated relationship between neurological organization (as measured individually and in combination, by creeping and laterality) and reading achievement." (p. 522). Robbins further declared that "the entire theory is suspect." (p. 523). The effectiveness of psycholinguistic training was researched by Hammill and Larsen, whose admonition was, "programs designed to improve psycholinguistic functioning need to be viewed cautiously and monitored with care so that children experiencing difficulty in school will not be subjected to meaningless and irrelevant activities that will result only in a waste of valuable time." (Hammill, Larsen 1974; p. 12). A study by Waugh (1973) investigating the relationship between modality training and reading led the author to conclude the "Remediation directed toward strengths and weaknesses in sensory and perceptual processing has not been effective." (p. 468).

In view of these opinions, what alternatives are available to the teacher? Tarver and Dawson, in a recent review of modality preference and reading concluded that "Assessing the strengths and weaknesses of the learner has so far met with little success. Perhaps it is time to turn our attention to assessing the task to be learned." (Tarver and Dawson 1978; p. 16). It may then be a question of accepting the position taken by Engelmann (1969) and Bateman (1971), who suggest that one must find out what the child needs to be taught and then teach it clearly and efficiently. This type of teaching is appropriate for any child, the child who has superior learning potential, the average child with or without a learning difficulty, the mild to severe learning-disabled child or at the extreme end of the continuum the mentally retarded child.

REFERENCES

Bateman, B. Essentials of teaching. San Rafael: Dimensions Publishing Co., 1971.

Bateman, B. Teaching reading: the fourth approach. Presentation to the Quebec Conference of the Association for Children with Learning Disabilities, Montreal, 1977.

Bryan, T. and Bryan, J. Understanding learning disabilities. Port Washington: Alfred Publishing Co., Inc., 1975.

Clements, S. D. Minimal brain dysfunction in children. (N.I.N.D.B. Monograph #3, Public Health Service Bulletin, No. 1415) Washington: United States Government Printing Office, 1966.

De Hirsch, K. Language and learning disabilities; an overview. Presentation to International Conference of Association for Children with Learning Disabilities, New York, 1975.

De Hirsch, K. and Jansky, J. Preventing reading failure. New York: Harper and Row, 1972.

Engelmann, S. Preventing failure in the primary grades. Chicago, Ill: Science Research Associates, 1969.

Frostig, M. and Maslow, P. Learning problems in the classroom. New York: Grune and Stratton, 1973.

Griffiths, C. P. Speech and language difficulties. In Franklin and Naidoo (eds.) Assessment and teaching of dyslexic children. London: Invalid Children's Aid Association, 1970.

Hallahan, D. P. and Cruickshank, W. M. Psychoeducational foundations of learning disabilities. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1973.

Hammill, D., Goodman, L. and Wiederholt, L. Visual-motor processes: can we train them? The Reading Teacher, 1974, 27, 469-478.

Hammill, D. and Larsen, S. The effectiveness of psycholinguistic training. Exceptional Children, 1974, 41, 5-14.

Johnson, D and Myklebust, H. Learning disabilities and educational principles and practices. New York: Grune and Stratton, Inc., 1967.

Pitcher-Baker, G. The Rosetta Stone revisited. Academic Therapy, 1976, 12:1, 39-51.

Robbins, M. A study of the validity of Delacato's theory of neurological organization. Exceptional Children, 1966, 32, 517-523.

Tarver, S. G. and Dawson, M. M. Modality preference and the teaching of reading: a review. Journal of Learning Disabilities. 1978, 11:1, 5-17.

Waugh, R. Relationship between modality preference and performance. Exceptional Children, 1973, 39, 465-469.

2. EARLY IDENTIFICATION OF LEARNING NEEDS

In seeking to provide programs to match the individual learning styles of children, the Ministry of Education for Ontario has issued policy statements which make early identification procedures mandatory for all school boards. Memorandum 1978-79: 15, required that by September, 1979, each board must have a specific procedure for determining a child's learning needs and abilities. Recognizing that time was required to develop, to modify and to refine early identification procedures, Memorandum (1979-80: 24), a supplement to Memorandum 1978-79: 15, was then issued specifying September, 1981, as the operational date. Within the context of the elementary school system 'early' refers to junior or senior kindergarten and definitely not later than entry into first grade.

Educators and researchers interested in optimum education for young children are concerned that early identification serve not only to identify, but to provide appropriate intervention as well. Appropriate intervention may be as simple as providing a more suitable seating location for a child with an attention problem, providing books to the child who is an able reader, arranging a part-time remedial withdrawal program to develop a child's fine motor skills or securing special class placement for a child with a severe learning disability. Silver and Hagin (1978,1980) in addressing the early identification issues have recommended a three-stage model, including 1) a scanning of all children in kindergarten, 2) an interdisciplinary diagnosis of those children identified as vulnerable, and 3) intervention in first grade before the children have failed. (1978, p. 439-440; 1980, p. 3)

The model proposed by the Ministry of Education in memoranda (1978-79: 15, 1978-79: 14 and 1979-80: 24) includes the same three-stage program. Excerpts from the memoranda articulate Ministry policy.

Memorandum 1978-79: 15, states that:

> "By September, 1979, each board in the province shall approve a specific procedure to determine the child's learning needs and abilities when the child is first enrolled or at least by the time the child is beginning a program of studies immediately following kindergarten". (p. 1)

Such a procedure must be developed in English and/or French, as required, and must consist of the following:

> "1. confidential information gathering in the form of a health and/or a social history... The form shall be part of the student's O.S.R. file,
>
> 2. general opportunities for the parent and teacher to share important information about the child's background and development,

3. a multi-disciplinary approach, where required, to provide assessments by professionals outside the classrooms,
4. an education assessment administered by the teacher which includes the communication areas of language and number skills".

Furthermore, the Ministry states that the early indentification procedures are only "one of a series of assessments of the child's progress to ensure that the program is appropriate for the child's needs". The purpose of early identification procedures is clearly defined in the following:

> "Early identification procedures must lead to activities which enable each pupil to participate as completely as possible in education programs". (p. 2)

Memorandum 1979-80: 24, states that:

1. "Teachers in consultation with parents must strive to know each child as soon and as thoroughly as possible in order to provide learning opportunities that will help each child..."
2. "A variety of strategies should be used to maintain an ongoing review of each child's emotional, social, intellectual and physical development."

3. "Continuous assessment from different perspectives should be followed up with suitable programs..."
4. "Information derived from assessment should be treated as tentative and temporary; it is not appropriate to use these data to predict children's long-term achievements."
5. "Teachers may identify some children with special needs who require further assessment..."

It is the school's mandate to accept each child as she/he is and to provide an appropriate program and learning environment in spite of the fact that because of a variety of influences including social, economic and cultural opportunities and even prenatal, perinatal and postnatal care, children arrive at school with very different sets of attributes, attitudes, aptitudes and expectations. The early identification procedure, as outlined by the Ministry, is viewed as a means of determining where the child is - what skills, aptitudes and abilities she/he has and the stages of development of each.

As a result of the early identification procedure the teacher should be able to determine the types and levels of program activities required to meet the child's needs. The early identification procedures should be viewed positively as a means of identifying high as well as low performers, strengths as well as weaknesses. Early identification procedures are seen as the first stage in an on-going assessment of a child's progress.

Given the policy of the Ministry of Education, it is essential that school personnel weigh very carefully the purposes, the procedures and the implications of any early identification program. Since the purpose of the identification procedures is to provide instruction which matches the needs of the child in terms of her/his acquired skills, ability and stage of development, they identification procedures must contain elements which are directly related to the situation the child is about to enter. In other words, the procedures must be appropriate for each grade level. Teachers must be fully aware that purpose of the identification program - to provide the appropriate teaching-learning match for the child. Too frequently, early identification programs are subject to abuse, in that problems develop as a result of self-fulfilling prophecy.

A second stage procedure, for students identified as having learning problems involves an individual diagnostic evaluation, which is outlined in Memorandum (1978-79: 14). This individual diagnostic evaluation should include:

> "- detailed health assessment (hearing, vision, physical and perhaps neurological)

- psychological assessment of intellectual functioning
- academic assessment
- assessment of the development and integration of auditory, visual, kinesthetic and motor functioning
- language assessment; and
- assessment of observed behaviours in a variety of settings". (p. 3)

It is important that a child's learning needs be identified as early as possible in his/her school career as learning patterns and attitudes are established during the early years. Furthermore, according to Kephart (1960), Frostig and Maslow (1973) and Wepman (1973) perceptual growth (motor, visual and auditory) develops maximally before eight years of age. In language, "maximum growth in the development of both receptive and expressive language occurs between the ages of twelve-to-eighteen months and three-to-four years" (Frostig and Maslow, 1973; p. 10). In spite if the fact that "Normal children show awareness of basic rules during the first years of their lives, 25 percent of first grade children miss out on simple classroom instruction" because they are unable to understand and process the formal language of classroom instructions. (De Hirsch, 1975) An additional factor to be considered is the rate at which intelligence develops - 50 percent of I.Q. is developed by four years of age and 80 percent of I.Q. is developed by eight years of age (Bloom, 1965; Weininger, 1974). Considering all these developmental factors, it is important that the child receive the stimulation and instruction which will develop and enhance the child's perceptual, language and cognitive abilities during these critical years. Research has furthermore indicated that "intervention is more effective when it is introduced before the child begins formal reading - at a time when the nervous system may be more plastic and responsive to change and the child is less subject to the shattering effects of repeated failures" (Schench, Fitzsimmons et al, 1980, p. 45). Progress at this stage can be remarkable because little time is needed to unlearn inappropriate practices which might later become deeply entrenched. The success rate in reading, in the example cited by Vernon (1970) was 82 percent when intervention in the form of remedial teaching was given between the ages of 6 and 7 years, while it was only 10 to 15 percent at ages 10 to 12 years.

Most readiness tests provide only a global score indicating a child's position from low to superior in relation to the normative group, without differentiating a child's performance on each of the subtests, and therefore do not indicate learning strengths or weaknesses. Many identification procedures, aimed generally at the kindergarten population, either at the beginning or end of that year, were developed in an effort to determine a child's learning strengths and weaknesses before the child experiences failure. Procedures included anecdotal records, observational data, check lists, rating scales, inventories and individually administered tests such as the De Hirsch Predictive Index as well as group administered tests. Included among the group-administered tests are the Slingerland Pre-Reading Screening Procedures and currently available readiness tests such as the Gates-MacGinitie, The Lee-Clark, The Clymer-Barrett and the Metropolitan which is probably the most widely used readiness measure (Maitland et al, 1974; Rubin et al, 1978). As a result of their research, Maitland and associates suggested that the Metropolitan Readiness Test be administered not at the end of kindergarten but at the beginning of first grade, as it "contributes more to understanding the child and to individualizing his instruction" and that by using cut-off scores (24 on total test as the bottom score in the D category on each subtest) "one will have identified those children who will most certainly have school difficulty unless they receive special help" (Maitland et al, 1974, p. 648). Subtest scores are important because they differentiate a child's performance task-by-task. Total or global scores, on the other hand, may mask a child's learning strength or weakness, as they represent the sum of subtest scores.

Although it is the 1964 edition of the Metropolitan Readiness Test that is referred to here, one should note that there are new Metropolitan Tests (Nurss and McGauvran, 1976), now available in two equivalent forms (P. and Q.), at two different levels. Level I is intended for the beginning to middle of kindergarten or for low students at the end of kindergarten or the beginning of first grade. Level II is intended for use at the end of kindergarten or the beginning of first grade. Both levels provide low, average and high performance ratings for each subtest, for each of the skill areas (auditory, visual, language, quantitative), for pre-reading skills (combined auditory, visual and language scores) and for the total test. Part II of the Teacher's Manual suggests how the test may be analysed, how the scores may be interpreted and how the information may be used for instructional purposes.

Supplementary to the tests themselves are two new materials. The Early School Inventory (Nurss and McGauvran, 1976) is to be used to obtain relevant information about the child's early development. The Parent-Teacher Conference Report (Nurss and McGauvran, 1976) provides a means of reporting the readiness test information to parents. Examples of the types of items on the test are given as well as the rating in each skill area and suggested ways in which the parents may help their child in a skill area.

For clarification purposes, consider a child whose total test score (Metropolitan Readiness Test, 1964) is 70 which would classify that child's readiness status as "high normal". However, on examination of the child's subtest scores, the teacher discovers a score of one (1) on the copying subtest clearly indicating a difficulty in this specific area. The implications of a problem in this skill area have particular significance in relation to a child's ability to print, to copy from the chalkboard and to complete assigned seatwork in an adequate manner and in an allotted time frame. On the other hand, take the example of a child whose total or global score is 48, indicating an average readiness status, but whose scores on the subtests of word meaning and listening are four (4) and five (5) respectively. For this child, whose difficulty appears to lie in understanding and following instructions, the educational need is to include a language development component, which would bring that child's level of language functioning as close as possible to the norm of her/his peers.

The manual of directions for the Metropolitan Readiness Test encourages teachers to analyse test performance in this manner when it states "a subtest - by-subtest study of the performance of certain pupils, particularly of those whose total score is in the D or E category will often yield useful clues about the particular areas in which the pupil is lacking in readiness" (Manual of directions, Form B., p. 9). Furthermore, the manual provides a table (Table 4) of the "Letter rating and readiness status to provide a basis for comparisons across the several subtests..." and to "develop a class (or school) profile depicting strengths and weaknesses in the aspects of readiness covered by the six tests" (p. 10). Analysing and comparing results by subtest will enable the teacher 1) to identify specific areas in which each child appears to have attained or not attained a level of maturity or skill, 2) to group pupils for instructional purposes, 3) to be aware of individual differences and the range of readiness among pupils, and 4) to plan instruction appropriate to the level of the class, groups within the class, and the needs of individual children (Manual of directions, p. 10).

The Metropolitan Readiness Test has been used here to illustrate how a currently available readiness test may be used to provide an objective measure of a child's strengths and weaknesses as they relate to the skills measured by the test. Any other readiness test might be scrutinized and analysed in the same manner to provide the type of information which would be helpful in making instructional decisions and provisions for children. However, it must be remembered that this is only one measure of a child's performance and that it discriminates against those children who are not "test-wise", or are unfamiliar with test situations. Furthermore, although it has been suggested that the Metropolitan Readiness Test has an 86 percent accuracy in predicting first grade performance (Lessler & Bridges, 1973), one should note that more confidence can be placed on high readiness scores as predictors of normal or high achievement; low scores less accurately predict low achievement because many children may do poorly as a result of a wide range of problems (Keogh, 1979; Rubin et al, 1978). Predictions, based on low overall performance on a readiness test should be viewed with some skepticism because of the many factors which may contribute to that performance. De Hirsch (1966), warns that "it is thus hazardous at best to predict performance and behavior from data collected at a time when the organism is still so very much in flux." (p. 84)

In addressing the conference of the Quebec Association for Children with Learning Disabilities (Montreal, 1979), with respect to early identification procedures, Keogh stressed the following points:

1. "There is not a single linear effect of a specific ability or disability on educational competence. There are lots of influences on a child's competence in school. We can not make a prediction on a single measure"
2. "Abilities and disabilities are interactive. Deficits may be compensated for by strengths in other areas... The trick is to help the child to use the ability he does have to compensate for or overcome the deficit areas"
3. "Risk status involves both child and program characteristics... Risk is a function not only of the child but also the situation in which the child functions".

From her experience in the research field and from her discussions with teachers, she concluded that there appeared to be two rather independent components of risk at kindergarten age, 1) academic aptitude, which included language skills, fine motor coordination problem-solving and 2) social adaptability, which includes learning the rules of school, ability to get along with other kids and with the teacher, ability to listen, to look attentive, to pay attention and to stay in one's seat. It was her concern that kindergarten teachers seem to put more weight on the social adaptability factor in their consideration of children at risk, though in fact, it is the lack of academic aptitude which contributes to greater and greater educational risk as the children progresses through school.

There is general consensus that teacher rating scales, containing at least a behavioural and an academic component, or an observational checklist of basic school skills provide a very reasonable and useful screening technique when administered within the classroom by the teacher (Keogh, 1979; Keogh et al, 1974; Feshback & Adelman, 1974; Adelman & Feshbach, 1971; Schaer and Crump, 1976; Glazzard, 1977; and Gacka, 1978). In addition to providing an excellent initial screening technique, rating scales, observational checklists or inventories, based on the behaviours and skills necessary for entry to a specific grade, identify what the children need to learn and thereby provide information which the teacher may immediately use for effective program planning. Moreover, sufficient data is collected to identify those children who require an extensive, individual diagnostic study (Colligan, 1977). Many rating scales, including the Pupil Rating Scale (Myklebust, 1971), the Kirk Rating Scale (Kirk, 1966), and the Student Rating Scale (Adelman & Feshbach, 1971), observational checklists (Mullen, 1975), and the Basic School Skills Inventory (Goodman and Hammill, 1975), are available from the test suppliers. However, teachers may design a very comprehensive inventory, related to their own circumstances, by using the information on page 45 of Education in the Primary and Junior Divisions (1975).

Although the items under "Assessing Readiness" (see Appendix ID) are directly related to learning to read, it would take little ingenuity or effort to include items which would provide information on a child's number, language or motor readiness as well as behavioural characteristics. Through devising and implementing rating scales, checklists or inventories directly related to the program, the teacher becomes more acutely aware of the demands of the program and the general needs of the children in relation to the program and the specific needs of some children relative to their peers.

Further to information derived from an observational assessment or a formal standardized assessment, it is important to gather information concerning a child's physical condition (general health, nutrition, allergies, vision, hearing, etc.). Parental involvement may often provide the means whereby a child's learning pattern may be accelerated through cooperative communication between the teacher and parent. Critical information to form an essential part of the child's on-going assessment file is the date of the child's birth. According to Ames (1977) and Richardson (1978) the majority of children having difficulties in school are children who are overplaced and are therefore too young for their grade placement. Children born in October, November and December, because they may be from eight to eleven months younger than children in the same class are at a distinct disadvantage when the expectations for them are the same as for children who are close to a year older. At age five or six years such a difference is considerable, representing one-fifth or one-sixth of the child's life span.

When the classroom teacher has accumulated all data with respect to a specific child (family and health history, anecdotal records, pupil rating scale or behavioural or skills checklist and perhaps the scores from a readiness measure) analysis of that data will determine the needs of the child and the direction of the program. The classroom teacher must seek to verify or negate the findings in light of her/his expertise and ability to individualize instruction according to the child's needs. When the child's needs cannot be met within the classroom, an appropriate intervention program should be planned by the special education, remedial or resource personnel, who may wish to supplement the findings by further individual diagnostic measures, to provide more specific information as to the nature of the child's difficulties. In some cases a cooperative program may be required permitting the special education techniques and procedures to be applied in the regular classroom by the teacher. Other children may require part-time withdrawal. Due to the severity of their problems, a small number of children should be referred to the educational psychologist for a complete assessment of intellectual, perceptual, social and language functioning. Whatever assessment is done, the results, as well as the implications of the findings with respect to classroom instruction should be made known to the teacher. Specific suggestions should be offered to the teacher in order that the child's learning opportunity can be increased, whether that child remains in the regular classroom, is placed in a partial withdrawal program, or in a structured special class.

Teachers have been cautioned to regard the results of screening procedures as tentative, because many factors contribute to the degree of risk and because children change so rapidly. Children may be classified as high-risk and then have no subsequent problems or conversely, children, determined low-risk, do sometimes experience learning problems. Nonetheless, screening practices have the potential to be very effective, provided that they are "close in time" and "directly related to the particular programs in which the child will be placed" (Keogh, 1977, p. 269), and are viewed as a basis for program planning.

Many researchers and educators are of the opinion that learning difficulties may be as much a function of the learning environment as they are of the child. They caution teachers to look at the learning environment, to examine their own perceptions of the child within that environment and to assess their own ability to provide appropriate instructional programs (Haring, 1967; Throne, 1973; Keogh, 1979). Studies conducted by Hawthorne and Larsen (1977) and De Hirsch (1975) revealed that children with learning problems were generally lacking in preparedness for school, in desire and excitement about learning and in ability to curb impulsivity and to control behaviour. For these children, a carefully selected curriculum and controlled environment are necessary to provide a fertile background for learning and to ensure successful adjustment and later achievement. Hawthorne and Larsen (1977) suggest that the curriculum of the preschool and of the kindergarten should focus on developing and attaining those skills and behaviours that are necessary to school success. Eaves, Kendall and Crichton (1974) stress that, "Measures dealing with these problems would seem to require a far-reaching organization of the primary curriculum" (p. 638). Analysis of the data from early identification procedures can provide the basis for the development of a "far-reaching" curriculum which will meet the needs of individual children.

Since the early identification policy of the Ministry of Education is supported in principle and fact by Keogh's (1977) research, it is important to emphasize the following points:

> "- screening or identification is best carried out in part at least within the classroom in which the child is placed so that his behaviour in that situation may be assessed,
> - screening techniques or tests lead to educational decisions about instruction,
> - screening must be directed at identification of competencies which can be used to ensure success,
> - screening techniques for identification of educationally high-risk pupils provide information which allows differentiated program development" (Keogh, 1977, p. 269).

To summarize, according to Keogh (1977) early identification procedures must be viewed positively in that they must not be used to exclude children from school programs; they must provide information to be used in planning educational programs for all children, the high as well as the low performer; the information must be viewed as tentative; educational programs must be adjusted and implemented in response to the needs of the children - the programs must fit the pupils.

In conclusion, whatever early identification procedures are instituted, the teacher must be prepared to accept the child as she/he is, to look at that child in relation to the curriculum and the environment and be prepared to implement "whatever adjustments are necessary to meet the educational needs of that child".

REFERENCES

Adelman, H. S. & Feshbach Predicting reading failure: beyond the readiness model. *Exceptional Children*, 1971, 37:5, 349-354.

Ames, L. B. Learning disabilities: Time to check our roadmaps. *Journal of Learning Disabilities*, 1977, 10:6, 7-9.

Bloom, B. S. *Stability and Change in Human Characteristics*. New York: John Wiley Co., 1965.

Colligan, R. C. Concurrent validity of the Myklebust Pupil Rating scale in a kindergarten population. *Journal of Learning Disabilities*, 1977, 10:5, 317-320.

De Hirsch, K., Jansky, J. & Langford, W. *Predicting Reading Failure*. New York: Harper and Row, 1966.

De Hirsch, K. Language and learning disabilities - an overview. Presentation to the International Association for Children with Learning Disabilities, New York, 1975.

Eaves, L. C., Kendall, D. C. & Crichton, J. N. The early identification of learning disabilities: a follow-up study. *Journal of Learning Disabilities*, 1974, 7:10, 632-638.

Feschbach, S., Adelman, H. & Fuller, W. Early identification of children with high risk of reading failure. *Journal of Learning Disabilities*, 1974, 7:10, 639-644.

Frostig, M. & Maslow, P. *Learning Problems in the Classroom*. New York: Grune and Stratton, Inc., 1973.

Gacka, R. C. The basic school skills inventory as a preschool screening instrument. *Journal of Learning Disabilities*, 1978, 11:9, 593-595.

Glazzard, M. The effectiveness of three kindergarten predictors for first grade achievement. *Journal of Learning Disabilities*, 1977, 10:2, 95-99.

Goodman, L. & Hammill, D. *Basic school skills inventory*. Chicago's Fallett Publishing Co., 1975.

Haring, N. G. & Ridgway, R. W. Early identification of children with learning disabilities. *Exceptional Children*, 1967, 32:6, 387-395.

Hawthorne, L. W. & Larsen, S. C. The prediction validity and reliability of the Basic School Skills Inventory. Journal of Learning Disabilities, 1977, 10:1, 44-50.

Hildreth, G. H.,Griffiths, M. & McGauvran, M. Metropolitan Readiness Tests, Form A. & Form B. New York: Harcourt, Brace & World, 1964.

Hildreth, G. H. et al. Metropolitan Readiness Tests, Manual of Directions, New York: Harcourt, Brace & World, 1966.

Keogh, B. H., Tchir, C. & Windequth-Behm, M. Teacher's perceptions of educationally high-risk children, Journal of Learning Disabilities, 1974, 7:6, 367-374.

Keogh, B. Early I.D.: Selective perception or perceptive selection: Academic Therapy, 1977, 12:3, 267-274.

Keogh, B. Early identification of children with disabilities: problems and new directions. Presentation to annual conference of Quebec Association for Children with Learning Disabilities. Montreal, 1979.

Kephart, N. The slow learner in the classroom, Columbus: Charles & Merrill Co., 1960.

Kirk, W. A tentative screening procedure for selecting bright and slow children in kindergarten.' Exceptional Children, 1966, 33:4, 235-241.

Larsen, S. C., Rogers, D. & Sowell, V. The use of selected perceptual tests in differentiating between normal and learning disabled children. Journal of Learning Disabilities, 1976, 91:2, 85-90.

Lessler, K, & Bridges, J. The prediction of learning problems in a rural setting: can we improve on readiness tests. Journal of Learning Disabilities, 1973, 6:2, 90-94.

Maitland, S., Nadeau, J., & Nadeau, G. Early school screening practices. Journal of Learning Disabilities, 1974, 7:10, 645-649.

Monroe, M. Primary Aptitude Tests: (Primary form) For prediction and analysis of reading abilities and disabilities. Boston: Haughton-Mifflin, Co., 1935.

Mullen, J. Identifying L.D. kindergarten children. *Academic Therapy*, 1975, 11:1, 117-118.

Myklebust, H. The Pupil Rating Scale: Screening for learning disabilities. New York: Grune & Stratton, 1971.

Nurss, J. R. & McGauvran, M. Metropolitan Readiness Tests. New York: Harcourt, Brace & Jovanovich, 1976.

Nurss, J. R. & McGauvran, M. Teacher's Manual - Level I - Part I: Directions for administering. Part II: Interpretation and Use of Test Results.

Nurss, J. R. & McGauvran, M. Teacher's Manual - Level II - Part I: Directions for administering. Part II: Interpretation and Use of Test Results.

Nurss, J. R. & McGauvran, M. Early School Inventory (1976).

Nurss, J. R. & McGauvran, M. Parent Teacher Conference Report (1976).

Ontario Ministry of Education. Education in the Primary and Junior Divisions. Toronto, Government of Ontario, 1975(b).

Ontario Ministry of Education. Memorandum to directors of education and principals of schools Re: Early Identification of Children's Needs, 1978-79:15.

Ontario Ministry of Education: Memorandum to directors of education and principals of schools Re: Early Identification, 1979-80:24.

Richardson, S. Developmental dysfunction and learning disabilities. Presentation to 22nd annual convention of Ontario Council for Exceptional Children, Ottawa, 1978(b).

Rubin, R. A., Balow, B., Darle, J. & Rosen, M. Preschool prediction of low achievement in basic school skills. *Journal of Learning Disabilities*, 1978, 11:10, 664-667.

Satz, P. & Fletcher, J. Early screening tests: some uses and abuses. *Journal of Learning Disabilities*, 1979, 12:1, 56-60.

Schaer, H. F. & Crump. W. D. Teacher involvement and early identification of children with learning disabilities. *Journal of Learning Disabilities*, 1976, 9:2, 91-95.

Schenck, B. J., Fitzsimmons, J., Bullard, A. C., Taylor, H. G. and Staz, P. A prevention model for children at risk for failure. In Knights and Bakker (eds.). *Treatment of Hyperactive and Learning Disordered Children*, Baltimore: University Park Press, 1980.

Silver, A., Hagin, R. & Beecher, R. Scanning, diagnosis and intervention in the prevention of reading disabilities. I SEARCH, II TEACH. *Journal of Learning Disabilities*, 1978, 11:7, 439-445.

Silver, A. & Hagin, R. An interdisciplinary model for the prevention of learning disability. In Knights and Bakker (eds.). *Treatment of Hyperactive and Learning Disordered Children*, Baltimore: University Park Press, 1980.

Throne, J. M. Learning disabilities: a radical behaviorist point of view. *Journal of Learning Disabilities*, 1973, 6:9, 543-546.

Vernon, M. D. Specific developmental dyslexia. In Franklin and Naidoo (eds.). *Assessment and teaching of dyslexic children*, London: Invalid Children's Aid Association, 1980.

Weininger, O. Tortoise and hare. Part II of a discussion on early schooling. *Educational Courier*. April 1974, Vol. 45:6, p. 13.

Wepman, J. Auditory Discrimination Test (Revised) Manual of Instruction. Chicago: Language Research Associates, 1973.

3. DIAGNOSTIC ASSESSMENT PROCEDURES

In attempting to meet the needs of the individual child, it is the teacher's responsibility to accumulate data concerning the child's competencies and learning style, as well as what the child has learned, and failed to learn, in relation to age and ability level. Data of this nature may be obtained either through formal or informal assessment procedures, or through a combination of both. Whatever type of assessment is implemented, the information derived should be translated into instructional programs and strategies appropriate to the child's needs. The primary aim of any diagnostic assessment is to provide precise information about the child and the child's performance which will lead to effective instruction. In some school systems, a diagnostic assessment is an administrative requirement, prior to placement in a special class programme, but this should never be the primary purpose of a diagnosis, which, by the very nature of the word itself, implies a remedy or treatment rather than just placement.

Formal and informal assessment procedures have distinct characteristics, advantages and disadvantages which must be weighed in relation to the purpose of the procedure and the resources and time available for its administration and interpretation. Formal assessments make use of standardized tests, administered by trained personnel (a psychologist, a psychoeducational diagnostician, or a psychometrician working under the direction of a psychologist). Administration is on a one-to-one basis in a carefully controlled situation other than the regular classroom. A variety of tests are administered to sample the child's intellectual functioning, visual, auditory and perceptual-motor skills, speech and language skills, as well as academic achievement in the basic skill subject of reading, spelling, and arithmetic. Social, emotional and personality factors are often assessed to provide additional information. The following tests are currently used:

Intelligence: W.P.P.S.I., W.I.S.C., or W.I.S.C.R.
Stanford-Binet Intelligence Scale,
Slosson Intelligence Test,
Peabody Picture Vocabulary Test.

Perceptual Skills: Developmental Test of Visual Motor Integration (Beery Buktenica)
Bender Visual-Motor Gestalt Test (Koppitz)
Visual Achievement Motor Forms (Kephart)
Developmental Test of Visual Perception (Frostig)
Memory for Designs (Graham-Kendall)
Benton Visual Retention Test (Benton)
Auditory Discrimination Test (Wepman)
Auditory Memory Span (Wepman)
Auditory Sequential Memory (Wepman)

Language: Illinois Test of Psycholinguistic Ability
(Kirk and McCarthy)
Verbal Language Development Scale (Mecham)
Templin-Darley Tests of Articulation

Achievement: Wide Range Achievement Test (Jastak)
Metropolitan Achievement Test
California Achievement
Stanford Achievement Test
Durrell Reading and Achievement Test
Peabody Individual Achievement Test

The advantages of a formal assessment include, 1) confirmation or elimination of mental deficiency as an area of concern, 2) detection of a pattern of strengths and weaknesses, 3) identification of general areas of failure and 4) patterns of observed behaviour. Disadvantages centre primarily around the fact that the testing situation (one-to-one situation) may be unrelated to the classroom situation in which the child functions daily. Secondly, although a variety of scores have been obtained, they do not carry the specificity or the relationship to the classroom situation nor provide the teacher with new information. For example, a report indicating that a pupil is found to have an auditory memory problem communicates little to the classroom teacher.

The teacher is already acutely aware that the child is unable to remember simple instructions. A third disadvantage of formal diagnostic procedures is the use of normative information and its interpretation. It is important that the examiner know the group on which the test was normed and be able to interpret the normal ranges of ability, its deviations and especially standard errors of measurement and to relate such information to a specific child's functioning. To illustrate, it would be inappropriate to assess the intelligence of a newly immigrated Australian using the WISC-R which was normed on children in the United States. Differences in language usage, in cultural customs and background information which are oriented to the North American way of life would inevitably depress the child's score. Furthermore, the one shot standardized testing situation does not allow for the day-to-day variability in children; children react differently on different days to different examiners. Of concern to many examiners is the low reliability of many standardized tests. It is Hammill's (1971) opinion that "most presently available, standardized 'diagnostic' batteries lack the necessary reliabilities upon which to base effective intervention for individual children" (p. 346).

The informal evaluation, on the other hand, is generally administered by the classroom teacher, the teacher-diagnostician, the remedial or the resource teacher. The purpose of the evaluation will be to obtain information which will be vital to successful instruction of the specific child. To this end, assessment techniques should be related to the content of instruction as well as the teacher's method of instruction and expectations for the child. Teachers expectations which are sometimes too high or low have a tremendous bearing on a child's functioning within a specific classroom. The informal assessment provides an opportunity for the teacher to reassess his/her own expectations in view of the child's ability to perform a task and the difficulty the child encounters in doing so.

The enterprising teacher may wish to develop her/his own battery of informal tests, which provide an indication of the child's functioning in each of the areas outlined in the formal evaluation. On the other hand, the teacher may use daily situations, such as oral lessons, informal lessons, seat work exercises, written assignments and projects in order to observe, collect and record information which will be useful and relevant to the provision of effective instruction. In doing so, the teacher's frame of reference should be the group of which the child is a member.

During informal assessment, the teacher must be attentive to 1) what the child does, 2) how the child does it, and 3) what the errors are. The teacher must observe and record errors, as well as analyse the errors to find out where the child went wrong, and why and what must be taught in order to correct the error.

Basic to any evaluation is the consideration of the following five factors:

1. Child's age: Note the child's age in relation to the others in the group. Note especially the month of birth. It is an acknowledged fact that the majority of children experiencing learning problems have a birthdate in the last three months of the year (October, November, December).

   (Ilg & Ames, 1965, Ames, 1977, Richardson, 1978(a))

2. Intellectual capacity: Although group intelligence test scores are often included in a child's record a teacher must be careful not to attribute undue credence to the score until the test itself is understood, and the circumstances under which it was administered and the child's reaction to the circumstances are examined. It is important that the teacher

be aware of the child's learning rate in informal situations where the child is exposed to something he wants to learn. Be aware too, of the child's contribution in oral situations. These indicators may be more reliable than the designated intelligence quotients as measured by an inappropriate test.

3. Physical condition: Is the child in good health? Is the child subect to specific illness? allergies? Has the child adequate sensory functioning? Motor? Vision? Hearing?

4. Social and cultural background: Does the child come from an enriched or disadvantaged background? Has the child had the normal childhood experiences? Is the language and culture of the child different from the rest of the group?

5. School history: Note changes of schools, changes of teachers, absences, progress to date, grades repeated.

This information will provide the teacher with a good basic understanding of the nature of child's learning difficulty and a knowledge of contributing factors. Perhaps, as suggested by Ilg (1965) and Ames (1977) the learning problem may be due to the fact that the child is simply overplaced in terms of age and ability; in other words, the child is too young for the grade placement. If sufficient insight into the child's learning difficulty is not gained through this background information, the teacher should then assess perceptual skills.

Perceptual skills (based on observation)

1. Motor: Gross Motor:
    1) Is the child clumsy or awkward? in the classroom? in the gym? in the playground?
    2) Can s/he hop on each foot? skip across the room? catch a ball?

    Fine Motor:
    1) Is the child able to do hand work such as cutting, colouring, pasting, painting, and clay modelling, etc.?
    2) Can the child trace a picture and stay within the lines while colouring it?
    3) How does the child print or write?
        a) How is the pencil held?
        b) Is the printing too large or too small?

c) Can the child keep within the lines?

d) Does the child know how to form the letters or numerals?

e) Does the child know how letters are joined in writing? (e.g. bl, ou, etc.)

f) Can the child judge how much space is required for a word in a sentence?

g) How much effort does the child have to put into printed or written work?

h) Are there many erasures?

i) How long does the child require to complete a task?

2. Visual skills:

   1. Visual motor:

      a) Can the child copy a circle? a square? a triangle? a rectangle? and a diamond? According to Gesell and Kephart a child should be able to copy a circle at 3 years, a square at 4 1/2 years, a triangle at 5, a rectangle at 6 and a diamond at 7. (Di Leo, 1970, p. 202-203)

      b) Can the child print her/his name? letters? numerals? words? sentences?

c) Has the child established the left to right order of printing?

d) Can the child copy 3 to 5 short sentences from the chalkboard? How long does it take?

e) Can the child copy the same quantity at near-point? In copying, check the accuracy, the punctuation, capitalization, letter formation, and organization as well as the time factor.

2. Discrimination:

a) Can the child match the upper and lower case letters?

b) Does the child confuse letters on the basis of structure? (n-h, c-e,) orientation? (b-d, m-w, b-p) or both? (t-f, r-n, u-n).

c) Can the child discriminate a familiar word among a series of other words? dog/boy, god/dog, dog/bad.

d) Does the child confuse words such as then-when? where-when? this-that? who-how?

e) Can the child find and underline words appearing in a sample sentence?

Sample sentence "The dog is black."

Underline here the words which appear in the sentence.

they the them boy god dog in it is back black block

f) Can the child recognize a hyphenated word as one word? send-ing.

3. Memory:

a) Can the child remember what her/his mitts are like? shoes? scarf? jacket? etc.

b) Can the child remember the letter symbol associated with the letter name?

c) Can the child remember the correct formation of numerals?

d) Can the child remember words from day to day?

e) Can the child remember the order of letters within a word?

f) Can the child remember whole words or part of words when copying from the blackboard or does the child have to look up then down for each letter as it is printed?

3. Auditory skills:

Attention

a) Does the child listen to stories?

b) Does the child understand when spoken to?

c) Can the child follow instructions? a one-step instruction? a two-step instruction?

d) Does the child ask for frequent repetitions?

e) Does the child sit, not knowing what to do, when all others have begun?

Discrimination

a) Can the child identify noises? voices?

b) Can the child discriminate tones of voice? (tones indicating pleasure, displeasure, alarm, etc.)

c) Can the child discriminate similar words? (bed-bad, thirst-first)

d) Can the child discriminate sounds (or syllables) in a word?

e) Can the child blend parts of a word (sounds or syllables) to make a whole word?

f) Can the child discriminate between similar phonic elements? (m-n, b-p, t-d, e-i, o-u, etc.)

g) Can the child sequence phonetic elements in the correct order (animal vs aminal, hospital vs hostipal).

Memory

a) Can the child remember a story that has been read or told?

b) Can the child remember names of things or people?

c) Can the child remember the sound associated with a specific letter symbol?

d) Can the child remember the days of the week? the months of the year? the letters of the alphabet?

e) Can the child remember rhymes? songs? addition, subtraction and multiplication facts?

f) Can the child remember what she/he has read?

Speech and Language skills:

1. Speech:

   a) Does the child speak clearly and plainly?

   b) Does the child have any speech (articulation or impediment) problems?

   c) Does the child sequence the sounds or syllables correctly or does the child omit or transpose sounds or syllables? (aminal for animal, hostipal for hospital).

2. Language:

   a) Is the child's vocabulary consistent with her/his age?

b) Does the child understand when spoken to?

c) Does the child speak in words? phrases? or sentences?

d) Is the child able to describe an object? an event? to tell a story? to answer questions?

e) Does the child show an understanding of grammatical structure? of syntax? of plurals? of tenses? etc.

Academic Skills

Included here is a preliminary list of skills in the subject areas. More detailed assessment procedures will be given when each subject area is discussed separately in subsequent chapters.

1. Reading:

   a) Does the child know the letters of the alphabet?

   b) Does the child know the sound associated with each symbol?

   c) Has the child acquired the vocabulary necessary for her/his reading level?

   d) Can the child read orally? silently?

   e) Does the child understand what has been read?

   f) Does the child remember what has been read?

g) Does the child read very slowly? Why?

h) Does the child guess? from configuration? from contex? from picture clues?

i) Does the child confuse words? omit words? skip lines?

j) Has the child any system for attacking new or unfamiliar words? phonetic skills? structural analysis skills?

k) Does the child tire while reading? Is the book held too close? too far away? Does the child squint? Does the child rub her/his eyes?

l) Is the child able to maintain ocular control along the line of print? from one line to the next?

2. Spelling:

a) Does the child understand the relationship between letters and sounds? between the visual form of words and its spoken counterpart?

b) Does the child confuse consonant sounds (b-p, m-n, t-d)?

c) Does the child confuse vowel sounds? (a-e-i-o-u)

d) Can the child provide the visual-motor pattern for the auditory pattern of the word?

e) Can the child revisualize the word which has been heard?

f) Is spelling nothing more than a short-term memory exercise?

g) Does the child understand that spelling is necessary to written communication?

h) Does the child have difficulty keeping up with the speed of the teacher's dictation?

i) Has the child mastered any of the basic spelling rules? (removing 'e' before ing; doubling the final consonant before adding 'ed' or 'ing' in a word with a short vowel; pluralizing words ending in sh, ch, x and y, etc.)

3. Mathematics:

a) Does the child understand the language of mathematics? (more, less, add, subtract, carry, regroup, etc.)

b) Can the child group objects according to classification? (colour, size, shape, use, etc.)

c) Can the child relate elements in one group to elements in another group? (similar or dissimilar, more or less, etc.)

d) Does the child understand the concept of conservation? (that quantity remains the same regardless of the arrangement)

e) Does the child understand reversibility?

f) Can the child arrange objects, numerals, etc, in progression from smaller to larger?

g) Can the child associate the appropriate numerical quantity with the appropriate numerals?

h) Does the child understand the fundamental principles of addition, subtraction, multiplication, division, etc.?

i) Does the child know the steps in the process? the sequence of steps? where to begin?

j) Can the child read and comprehend the reading matter in the text or work-book?

From the above outline, a teacher may develop her/his own informal diagnostic test, battery or checklist. Since informal diagnosis is based on day-by-day observation of behaviours, as well as an analysis of the child's errors, the information gained is more representative of the child's functioning within that particular classroom. Through the diagnostic procedure, the teacher discovers those skills which are good, those skills which are satisfactory and those which are deficient. Not only does the informal diagnostic procedure increase the teacher's awareness of a child's needs, it gives the teacher a place to start, a nucleus around which to plan a programme, an opportunity to implement his/her own teaching strategies in response to the child's needs, and to verify observations and assessment in terms of expectations for that child in the classroom. In other words, the informal diagnostic assessment procedure satisfies the purpose for which it was intended, "to prepare an instructional programme for the child based upon his performance and needs" (Vance, 1977, p. 302).

If, however, it is possible to conduct formal assessments within a school system, the teacher's informal assessment will augment the formal assessment with valuable information pertinent to a specific child in the classroom. The teacher's informed opinion with respect to the educational abilities and needs of the child and a formal assessment referenced to children of the same age or grade, are both essential to decisions concerning instructional methods and procedures and the necessary adaptations to the educational environment for a child with learning difficulties.

REFERENCES

Ames, L. B. Learning disabilities; Time to check our road maps. *Journal of Learning Disabilities*, 1977. 10:6, 7-9.

Di Leo, J. H. Early identification of minimal cerebral dysfunction. *Academic Therapy*, 1970, 5:3, 187-203.

Gesell, A. & Armatruda, K. *Developmental diagnosis*. New York: Harper and Row, 1947.

Hammill, D. Evaluating children for instructional purposes. *Academic Therapy*, 1971, 6:4, 341-353.

Ilg, F. & Ames, L. B. *School readiness*. New York: Harper and Row, 1965.

Kephart, N. *The slow learner in the classroom*. Columbus: Charles Merrill Co., 1960.

Richardson, S. Continuing advocacy for children. Presentation to Ottawa Chapter of Association for Children with Learning Disabilities, Ottawa, 1978(a).

Vance, H. B. Informal assessment techniques with L. D. children. *Academic Therapy*, 1977, 12:3, 291-303.

CHAPTER II

PRINCIPLES OF INSTRUCTION

1. TEACHING STRATEGIES

Above all else, children with learning difficulties need good teaching. Much of their difficulty in learning has persisted as a result of teaching which is appropriate for most students, though inappropriate for them. They need a different kind of teaching because they learn differently. They require teaching strategies which take into account the unique and discrete qualities the child brings to the learning situation. In other words, the child with learning difficulties requires individual or individualized instruction. Individual (one-to-one) instruction can be available in remedial, resource or special class situations, and through the assistance of peer tutors, volunteers and teacher aides discussed in the chapter to follow. The best the regular classroom teacher can do is individualize instruction, which means modifying the regular class instruction to avoid or compensate for the child's learning difficulty.

Individualization

Individualization for one or two children in a class of thirty can be accomplished very successfully if the teacher is prepared to devote time and energy into developing an individualized approach. At the outset, the teacher must be aware of the child's learning difficulty and how and where it is exhibited. In developing the instructional unit the teacher must first be certain that all prerequisite skills have been taught and mastered; that the materials for the lesson are appropriate; that additional aids required to supplement the lesson are available; that follow-up activities are within the child's capabilities and interests, and that time is allotted to evaluate the success of the teaching-learning experience. Perhaps the easiest type of individualization is that of allowing a few minutes at the end of a group lesson to ensure that a particular child has understood what has been presented. A few minutes used for clarification of a concept or for a review of instructions, may prevent ensuing difficulties and can be accomplished while the rest of the group continues with lesson application activities. If, however, the teacher knows that the child has trouble attending and following instructions, the teacher should ensure that visual (films, pictures, slides, drawings) and/or concrete materials (objects) are made available to supplement the oral lesson presentation. Secondly, care must be taken in order that the lesson period does not overtax the child's attention span. Lessons of 15 to 20 minutes duration are preferable to half or three-quarter hour presentations. And thirdly, instruction for follow-up activities are written or printed on the chalkboard or work-sheet or at the learning centre, so that the child need not rely entirely on memory of the teacher's explanation. Individualization in this manner can be successfully accomplished within the schedule of the regular class, and yet is responsive to the needs of the child with attentional difficulties. As another example, an individualization procedure appropriate for children who cannot write as quickly as others and thus have difficulty with spelling and dictation, is to have another child dictate the spelling or for the teacher to tape-record the dictation and allow the child to play it back at his own pace. With these two simple examples, it is evident that a teacher who is aware of a child's difficulty can easily individualize instruction by adjusting the materials and time of the lesson presentation as well as the evaluation techniques. It requires only an awareness of the child's problem and a willingness to manipulate or create an environment in which the child can succeed.

Precision teaching

Precision teaching is a strategy that is very useful in individualizing instruction. It is not a methodology but rather a "set of procedures which can be used with any method of teaching"

(Johnson and Brothen, 1975; p. 321). It is a "direct assessment approach which can lead to educationally specific and relevant programs" (Alper et al, 1973-74; p. 152). Precision teaching is directed to the improvement of one specific behaviour at a time. The emphasis of the strategy is to develop mastery, to provide for overlearning. There are four basic component steps to the precision teaching technique:

1. Pinpoint the specific behaviour to be improved.
2. Set aims or criterion.
3. Use rate as a measurement unit.
4. Chart daily progress.

Step 1

Pinpoint the behaviour. Through analysis of a child's error, coupled with the observations of what the child does as s/he works, the teacher can pinpoint the behaviour which is preventing the child from successful performance in a specific task. Suppose for example the child has difficulty sounding out simple words. A quick-check of sound/symbol association may indicate that the child does not know all the sound/symbol relationships.

Step 2

Set appropriate aims. The appropriate aim is that the child be able to give all the sound/symbol correspondences immediately and accurately in random order and in upper and lower case form. Since precision teaching is based on time as a unit of measurement, the number correct within a specified time period would be the criterion.

Step 3

Set the measurement units. To develop an appropriate measurement unit requires the collection of data from children of the same age or grade who perform the task well. If this group can give the letter/sound relationship at an average rate of 55 per minute, this then would be an appropriate criterion for the child. To know how much the child need improve, it is also necessary to gather baseline data of the child's present performance. To determine the child's baseline performance, average three one-minute samples taken at different times. If it is 25 letter/sounds per minute, this indicates to the teacher the extent of improvement necessary to reach the desired level.

Step 4

Chart the progress. The child might make his/her own chart, numbering it from 20 to 55 and each day record the number correct within the one-minute period. This visual representation provides immediate feedback to the child and reinforcement when progress has been made. The activity should be continued daily until the child has reached the criterion which indicates mastery.

Method

1. The teacher must specify how the technique is to be accomplished. In this example, is the child to have his/her set of letter cards? Is a letter card turned over as the sound association is given? Does the child have to write the letter symbol as the sound is given? Must the child say the sound as she/he points to it on a printed work-sheet?
2. The teacher must arrange the instructional sequence from easy to difficult. In this case, the sequence might be as follows:
    - a) say the sounds for the upper case letters in alphabetical order
    - b) say the sounds for the upper case letters in random order
    - c) say the sounds for the lower case letters in alphabetical order
    - d) say the sounds for the lower case letters in random order

    e) say the sounds for mixed upper and lower case letters in alphabetical order
    f) say the sounds for mixed upper and lower case letters in random order

3. When preparing the sequence the teacher must be certain that the child has learned all prerequisites skills. For example, the child must be able to recognize and name each of the letter symbols. Prepare the appropriate materials (letter cards, both upper and lower case or printed work-sheets).
4. The child touches the letter symbol and gives the sound as the teacher watches and records the errors. The child counts the number of correct responses and records the number on the chart. The teacher uses the error or omission list for teaching purposes.

Although the preparation of cards, activities and work-sheets may seem time-consuming, it is worth while in that a teacher can quickly develop a library of such materials for future use. Because the technique is so simple and precise, it is one that may be handled by a volunteer or even a senior student. The one-minute time frame makes it possible for a teacher to include the activity on a daily basis.

Diagnostic prescriptive teaching

The aim of diagnostic prescriptive teaching is to correct a child's learning problem by devising methods and materials to avoid or compensate for the deficit. The theory underlying the diagnostic prescriptive approach, as described in early writings by Kirk Bateman (1964), Lerner (1975), McCarthy (1977), Rosenberg (1969) and others is that although only the product of a learning disability is directly observable, it is caused by an underlying process deficit. In this context, product generally refers to academic skills such as reading, spelling, etc., whereas process refers to the functioning abilities of the motor, auditory, visual and verbal systems. As Ysseldyke (1974) explains, the adherents to this diagnostic prescriptive approach agree on four assumptions 1) that children do have strengths and weaknesses, 2) that these are causal to their learning or not-learning, 3) that strengths and weaknesses are measurable and 4) that teaching may be directed toward process deficits, or toward manifested ability strengths and weaknesses (p. 181).

The diagnostic prescriptive model requires a knowledge of a child's best learning system (auditory, visual, motor) and the child's learning style (verbalizing, tracing, etc.). As Chalfant (1975) points out, "If you watch the child closely, he will tell you how to teach him." However, research has thus far failed to support the assumption that process training by itself has a significant positive effect on acquisition of academic skills. (Hammill, Goodman & Wiederholt, 1974, Hammill & Larsen, 1974, Lyon, 1977, Robbins, 1966, Tarver and Dawson, 1978). Convinced that process and product are interrelated, McCarthy (1977) suggests that the teacher train the process on the task itself. If for example, the child has auditory-memory processing difficulty, and does not know the addition facts, one attempts to train the auditory-memory function using the addition facts being taught. Bateman (1964) describes the diagnostic prescriptive model as a narrowing of focus, where elements are discounted until the primary area of disability remains. The prescriptive-remedial process is a broadening process, directed initially toward the primary area of disability, and broadening in scope to include related areas and eventually to generalization and application in academic areas. Consider, for example, the child who reads haltingly. Though the problem indicates poor sight vocabulary, this is due to poor visual memory, and visual memory must then be considered the primary area of disability. The prescriptive remedial approach thus seeks to develop overall visual memory rather than simply an improvement of sight vocabulary. One might begin by showing a child a few concrete items on a tray, removing one item while the child is not looking, and asking the child to identify the missing item. As the child's ability to remember concrete objects improves, the teacher would then try shapes, then letters, numerals, and then a sequence of two letters, building up to words, which would have to be identified among other words and finally written or printed from memory.

Through this progression, one can see how the remedial process began at the primary area of disability, broadened and related to other areas, and finally generalized to the academic tasks of reading and writing. To provide an effective diagnostic prescriptive treatment involves knowledge of three main factors:

a) What is the task the child cannot do?

b) What process prevents the child from being able to do the task?

c) What is the child's best way of learning?

To answer each of these questions requires a formal assessment by a psychologist or diagnostician, trained to use diagnostic and assessment instruments or an informal assessment by the teacher. Perhaps the most valuable assessment is that done by the teacher, which provides valuable insight into the child's problem. Rosenberg (1968) places particular emphasis on observing a child's errors. Through an observation of how a child works through an activity, and noting errors, the teacher is provided with clues as to the child's learning style and the processing difficulty which underlies the problem. From this informal diagnosis, the teacher formulates certain hypotheses which become the framework for the prescriptive teaching which McCarthy (1977) describes as an "alternating teach-test process or a continuous teaching and diagnosing process." Rosenberg (1968, p. 21) states three components of diagnostic teaching, 1) "the possession of a clear teaching objective and knowledge of steps necessary to reach this objective", 2) "the ability of the teacher to thoroughly assess the individual differences that significantly influence the child's learning abilities", and 3) the teacher must "harmonize or fuse the curriculum with the unique competencies, needs and interests of each pupil".

Diagnostic prescriptive teaching procedure

1. Teach
2. Observe and record
    - the child's physical ability to meet the task demands
    - the child's attitude towards the task and towards self

- what the child does (approach to task)
- how the child does it (style of learning)
- how the child tries to compensate (modality preference)
- the child's errors

3. Vary the task demands - analyse the child's errors.

   Determine the child's readiness in relation to the sequential steps of the task.

   Simplify the task.

   Simplify the objective.

4. Provide conditions and materials related to the child's preferred learning style and rate.

   Simplify the response.

   Focus on the channel of learning (if auditory, is a motor component necessary? if visual, is an auditory component necessary? Is it necessary to involve all channels of learning?)

5. Reteach according to the specified objective and in relation to the above analysis.

6. Adjust instructional procedures and shift focus as necessary.

Cruickshank (1975) stated that the purpose of the diagnostic prescriptive approach was to "match educationally that which has been picked up diagnostically". The success of a diagnostic prescriptive remedial approach is dependent on a teacher's awareness of and alertness to a child's learning difficulty and an ability to analyse the difficulty and adjust teaching methodology and materials to meet the child's needs. It requires an on-going assessment of one's own teaching to know when to move to the next step in the procedure or when to shift, if necessary to a different approach.

Task Analysis

Although task analysis is a component of the diagnostic-prescriptive model, its emphasis is different in that the concern is not as much with the process as with the task itself.

While the diagnostic-prescriptive approach is concerned with both observable skill deficiencies and underlying process weaknesses, task-analysis focuses directly on the skills required to complete a task. Task analysis is a technique which can be acquired by any teacher and applied to any instructional problem, regardless of the methodology. Furthermore, task analysis requires no specific diagnostic instruments nor the interpretation of sophisticated psychological reports. It does require a knowledge of what is involved in the task facing the child. To do so, the teacher must be aware of the input demands (how the child is to register response to the task) and be observant of how the child handles the demands of the task. In addition to awareness of the demands, the teacher must know the child's readiness for the task. In other words, has the child all the prerequisite skills to complete the task? Last and perhaps most important, the teacher must be able to break down the task into its smallest units, and to arrange these units into a sequence, beginning at what the child already knows and accumulating in a spiral fashion little bits of information until the child has learned, mastered and overlearned the task.

A recent book entitled Creating Instructional Sequences by Siegel and Siegel (1977) provides a clear, concise description of the task analysis technique, and offers a set of guidelines for the classroom teacher:

1. Activities must be directly related to the behavioural objectives.
2. Decide what the prerequisites are; "use what the child knows to help him learn the new".
3. Actual materials must be motivating.

4. Identify the sequential components.
5. Know all the phases of a given task's requirement.
6. The child must be required to do something to show that the teacher has taught.
7. "Do not merely present, TEACH".

From these guidelines, the authors have specified the following four elements of task analysis:

1. Behavioural objective
2. Entering behaviour
3. Instructional procedure - sequential steps
4. Assessment

Step 1 - Behavioural objectives

Since the task analysis technique is concerned with treating one specific task in detail, the first step is to define the objective. Specify the aim of the lesson(s) and define precisely what the child will be able to do as a result of instruction. For example, the behavioural objective might be as follows "the child will be able to print from dictation, 20 three-letter words containing the short vowel sounds of a, o and i with 90% accuracy.

Step 2 - Entering behaviour

The entering behaviour is the child's readiness for a specific task. To determine the child's readiness, the teacher must analyse what the child knows and does not know in relation to the behavioural objectives which have been established. It is necessary to list sequentially the skills required to reach the objective and to determine where the child places in the sequence. Basic to the objective specified in the Step 1 example are the following:

1. knowledge of letter names
2. discrimination of letter symbols (b-d, m-w, m-n, n-u, p-q, etc.)
3. knowledge of letter/sound relationships
4. discrimination of consonant sounds (b-p, d-t, m-n, f-s, etc.)
5. ability to print the letter when given the name
6. ability to print the letter when given the sound
7. discrimination of vowel sounds a, o and i as in pat, pot, pit; and ability to associate the sounds with the letter symbols a, o and i
8. ability to hear the sequence of sounds in a 3-phoneme word such as pat, pot or pit
9. ability to hold in memory the order of the sounds
10. ability to print the letters for the sounds in the correct order.

Through a check-list the teacher may find that the child has mastered the first six steps in the sequence, which would indicate the child's entering behaviour.

Step 3 - Instructional behaviour - sequential steps

Having determined the entering behaviour, the teacher must then examine those skills which should follow systematically and which the child must master in order to meet the behavioural objective. Using the entering behaviour as the starting point, teaching should then proceed with tasks arranged in sequential steps, allowing the child to master skills of increasing difficulty. The child's degree of difficulty will determine how much can be accomplished in each lesson. Although the tasks are arranged in sequential steps, it does not necessarily follow that each step will be accomplished in each lesson or conversely, that a lesson will be required for each step. A child with a specific learning difficulty may require three or more lessons to master one step, whereas a gifted child with no difficulty may master four, five, six or more steps in one lesson. Since each step must be mastered before proceeding to the next in the sequence, the teacher must show ingenuity and creativity in order to keep the lessons interesting and the child motivated. Instruction should be so precise and so effective that mastering the next step in the instructional sequence is within the child's reach. For the example above, the next instructional step would be #7, which requires discrimination of the short vowel sounds of a, o and i and the ability to associate the letter symbol for each sound. The following illustrates the subskills to be mastered at this stage:

1. auditory discrimination of sound of 'a' in pat, tap, map, cat, etc.
2. auditory discrimination of sound of 'a' in pat or put.
3. auditory discrimination of sound of 'o' in pot, top, mop, cot, etc.
4. auditory discrimination of sounds of 'a' from 'o' as in pat, pot, tab, cob, not, tan, etc.
5. auditory discrimination of sound of 'i'
6. auditory discrimination of sound of 'i' from 'a'
7. auditory discrimination of sound of 'i' from 'a' and from 'o'
8. association of letter symbol 'a' with sound of /a/
9. association of letter symbol 'o' with sound of /o/
10. association of letter symbol 'i' with sound of /i/
11. ability to print the letter symbol 'a' when the sound /a/ is heard; to print the letter symbol 'o' when the

sound /o/ is heard; to print the letter symbol 'i' when the sound /i/ is heard in words such as pan, pin, tam, rob, pal, tip, etc.

When the child has mastered each of these sub-skills, or mini-steps, the teacher may then proceed to instructional step #8, similarly broken down into sub-skills.

As Siegel (1977, p. 47-48) suggests, teachers must "begin to think a lesson in terms of its sequential steps". Effective teachers who are sensitive to a child's needs seem to do this routinely and have the skill to match the instructional approach to the child's needs.

Step 4 - Assessment

Assessment refers back to the behavioural objective, which is in the example used, to print from dictation 20 three-phoneme words, containing the short vowel sounds a, o and i with 90% accuracy. Since the purpose of assessment is to determine whether the child has learned what the teacher set out to teach, the teacher must not give any clues in the form of facial expression, gestures or voice tone to indicate whether a child's response is correct or incorrect. To be certain that the child has mastered what the teacher has taught, the child must reach the objective on her/his own. Assessment takes place at each step in the instructional sequence in order to provide mastery and overlearning of each component necessary to the achievement of the ultimate behavioural objective. In the assessment procedure, consider the child's learning modalities, to be sure that an impaired modality is not affecting a child's performance. In the case of a cerebral palsied child, for example, the assessment could be done orally, allowing the child to spell the words aloud, or through having the child point to the letters in a word from a set of letter cards.

Siegel and Siegel (1977) contend that the task analysis approach lays the foundation for a master teacher. Hakim (1974, p. 209) believes that "task analysis is a strategy which will better enable the classroom teacher to effectively teach the mildly handicapped child in the regular classroom and will give the teacher the immediate responsibility for the child's instructional program". Junkala (1972, p. 39), another proponent of the task analysis technique, suggests that the information from task analysis "enables the teacher to individualize instruction in group settings... to determine pupil readiness, to teach groups of children with varying skills and to produce sophisticated alternatives to instructional failure". In the task analysis model, emphasis is placed on the "child's current level of skill development, the next skill to be mastered and the behavioural components of that next skill" rather than the "hypothetical constructs presumed to be causes of academic difficulties". (Ysseldyke, 1974, p. 182, 185)

Inherent in each of these teaching strategies are principles applicable to any type of academic problem and workable in any classroom situation. Furthermore, since the instructional procedures are based on the teacher's knowledge of the child, and observation of how and what the child does, the instructional activity is especially meaningful and relevant to the teacher's expectations.

In brief, the following principles apply to each of the teaching strategies:

1. Identify the problem.
2. Specify the teaching objective.
3. Determine the child's readiness in relation to the objective.
4. Teach prerequisite skills.
5. Provide appropriate instruction and materials.
6. Adjust procedures to meet the child's needs, how the child is to receive instruction (input) and how the child is to respond (output).

7. Provide ample practice to ensure mastery or overlearning.
8. Evaluate your teaching in terms of the specified objective. Ask yourself, "Has the child learned what I have taught?"

In adhering to these instructional principles, the teacher can more readily resolve the dilemna of "What do I want to teach?" and "How can I best teach it?"

REFERENCES

Alper, T., Nowlin L., Lemoine K., Perine, M., & Bettencourt, B. The rated assessment of academic skills. Academic Therapy, 1973-74, IX:3, 151-164.

Bateman, B. Learning disabilities - yesterday, to-day and tomorrow. Exceptional Children, 1964, 31:4, 164-177.

Chalfant, J. C. Investigating children's learning styles. Presentation to the International Conference of the Association for Children with Learning Disabilities, New York, 1975.

Cruickshank, W. M. Learning disabilities: the decade ahead. Presentation to the Ontario Convention of the Council for Exceptional Children, Toronto, 1975.

Hakim, C. S. Task analysis: one alternative. Academic Therapy, 1974-75, X:2, 201-209.

Hammill, D., Goodman, L., & Wiederholt, J. L. Visual-motor processes: can we train them? The Reading Teacher, 1974, 27, 469-478.

Hammill, D., & Larsen, S. The effectiveness of psycholinguistic training. Exceptional Children, 1974, 41, 5-14.

Johnson, D. L., & Brothen, C. Precision teaching in your classroom. Academic Therapy, 1975, X:3, 321-326.

Junkala, J. Task analysis and instructional alternatives. Academic Therapy, 1972, VIII:1, 33-40.

Kirk, S. A. & Bateman, B. Diagnosis and remediation of learning disabilities. Exceptional Children, 1962, 29:2, 73-78.

Lyon, R. Auditory-perceptual training: the state of the art. Journal of Learning Disabilities, 1977, 10:9, 564,572.

McCarthy, J. Is a learning disability another name for educational retardation? Presentation to the First Canadian Congress of the Association for Children with Learning Disabilities, Ottawa, 1977.

Robbins, M. A study of the validity of Delacato's theory of neurological organization. Exceptional Children, 1966, 32, 517-523.

Rosenberg, M. Diagnostic teaching, Seattle: Special Child Publications, 1968.

Rosenberg, M. Individual differences: a call for diagnostic teaching. Presentation to annual conference of the Association for Children with Learning Disabilities, Toronto, 1969.

Siegel, E., & Siegel, R. Creating instructional sequences, San Rafael: Academic Therapy Publications, 1977.

Tarver, S. G., & Dawson, M. Modality preference and the teaching of reading: a review. Journal of Learning Disabilities, 1978, 11:1, 5-17.

Ysseldyke, J. E., & Salvia, J. Diagnostic-prescriptive teaching: two models. Exceptional Children, 1974, 4:3, 181-185.

2. CLASSROOM MANAGEMENT

Educational Programs

According to the Ontario Ministry of Education, "every exceptional child has the right to be part of the mainstream of education to the extent to which it is profitable." (1975(b), p. 12)

Given this position, responsibility for classroom management of the child with learning difficulties inevitably presents a problem for the teacher and the school. Several alternatives are possible and need be presented.

Regular Classroom:

Whenever possible, the child with learning difficulties should be maintained in the regular classroom. This requires some special adaptations, dispensations and expectations. It may be difficult in a classroom of thirty or more children for a teacher to find the time necessary to be accepting of, and responsive to one child who may have learning difficulties. However, there are means by which the child's problems may be alleviated without placing undue stress on the teacher's already heavy load. Among the possible adaptations are:

1. Buddy system - the teacher assigns a capable student to assist the child with difficulties. The buddy, then, helps the child in whatever way may be required.

The child is advised to go to the buddy when s/he doesn't know what to do and when s/he doesn't know how to do it. A corner of the classroom may be sectioned off by book cases or filing cabinets, where child and buddy may work quietly on phonics, spelling, mathematics or other projects. Because it is an established fact that children learn best from each other, the buddy system warrants consideration. (Ehly & Larsen, 1975-76; Epstein, 1978)

2. Senior tutors: A tutoring arrangement may be implemented whereby students in higher grades provide assistance to younger children experiencing difficulty. It has been found that a nearby junior or senior high school may provide very valuable assistance to younger children (Post, 1975). Arrangements should be made whereby the tutor and child meet at a specific time on a regular basis. Or, if both attend classes in the same school, the older student may be called upon as problems arise.
3. Volunteer tutoring: In any school district, there are college students, parents, senior citizens, retired teachers, etc., who would be interested and capable of providing individual tutoring for a child who is having difficulty.

4. Within class grouping: Flexibility in class grouping is perhaps the first strategy that a teacher should try. If, for example, the child cannot keep up in math, the child can work with a lower group and move to higher groups as performance improves. However, care should be taken when moving a child to a higher group that all concepts necessary to the child's functioning in the higher group have been taught. This implies the necessity for individual teaching, as accomplished through any of the aforementioned tutoring assistant schemes.
5. Adaptations and dispensations: If, for example, the child has a severe visual-motor problem and cannot possibly complete the amount of paper and pencil seatwork required, the teacher may alter the requirements as follows:
    1. require only partial completion expecting, however, that work is done well.
    2. require only one-or-two word responses instead of complete sentences.
    3. require printed responses as much as possible, then oral responses for the remainder.

4. provide a work-book or work-sheet for the child where the responses may be filled in. To provide the pencil practice a child needs, s/he would then be expected to do the same exercises given to the group, though only as much as can be done well.

For auditory attention and memory problems, provide as much visual material (pictures, slides, films, concrete objects, demonstrations, illustrations) as possible to hold the child's attention, and to allow the child to relate to what is seen and heard. For the child who has difficulty understanding oral instructions, print the instructions, in point form on the chalkboard or the worksheet. Provide the child with a buddy to whom s/he may go when the auditory presentation is not understood.

Children with visual perception, visual discrimination and visual memory problems may be supplied with cues to which they can refer. A cue-card with appropriate pictures for b, d, p may be taped to the student's desk as ready reference until the child has sorted out the differences in the letters. Printing the first letter of a word in green emphasizing the left-to-right directionalty will alleviate the 'saw-was', 'no-on' problems. In reading, when the child encounters one of these confusing words, another technique is to have the child trace and say the first letter or sound of the letter. Memory problems are often relieved when a child is allowed to verbalize (talk to oneself) the steps to be accomplished. If a motor component (doing or tracing) is added, memory is reinforced even further.

For organization and spatial problems, the teacher must make expectations clear to the child. Suggestions for organizational and spatial problems include:

1. Personal possessions: For the child who is unable to organize personal possessions, providing a specific place (hook or locker) will be necessary. Label it with the child's name and show the child exactly how and where things should be. Similarly, the child's desk and books should be organized in an easily obtainable and maintainable manner.

2. Date: If work is to be dated, show the child where the date is to be placed and how to record it.

3. Margin: Show the child where the margin should be and how wide it should be. Drawing a margin with a green line emphasizes the starting place.

4. Numbering: Show by example and in chalkboard work how and where to number.

5. Spacing: The teacher must specify and indicate how large a space should be left between items. Show the child how to space letters and words on a line.

First grade children often learn to space words by using their index finger as a spacer to show that the next word starts at the side of the finger. For left-handed children, for whom this may be difficult, a small cardboard spacer or a small eraser or pencil will provide adequate spacers. Children need to be shown what to do when they reach the end of a line, when it is not the same as the example, or when it is not the end of the sentence. Children need to be shown that you do not print or write across the other side of the book but rather move down to the next line. If work is to be completed in columns, showing children how to fold the page lengthwise in halves, thirds, and quarters will provide an organizational and spatial structure for addition, subtraction, multiplication, computational problems, for synonyms (big - large) for opposites (big - little) or for lists (birds, animals, toys) etc.

Though some of the organizational procedures mentioned may seem to be too basic for children who have organization and spatial problems, it is important that the teacher provide very specific directions to indicate what is desired, and in all teaching lessons and exercises (work-sheets, demonstrations, chalkboard work), present a model of desirable organization and spacing.

Attention to these specific aspects of children's work at the beginning of eacy year will alleviate many such problems which are otherwise inevitable. Rather than accept the fact that the child is simply disorganized, the teacher accept the responsibility for teaching good organizational procedures.

All of the above options are both feasible and practical and may allow the child with a learning difficulty to remain in the mainstream of the regular classroom. There are, however, children whose difficulties require more specialized instruction than can be offered by the classroom teachers, even with the assistance of tutors and volunteers. For these children, a partial withdrawal arrangement may be necessary.

Partial Withdrawal: A partial withdrawal scheme generally refers to a situation where the child remains in the regular classroom, but is withdrawn several times a week for specialized instruction.

A remedial-withdrawal program, as outlined by the Ontario Ministry of Education (704-78, 1978, 32-1-a) is for exceptional students who are given special instruction for not more than half of regular class time; instruction may be given in the regular class or by withdrawing the pupil; instruction must be given by teachers who are qualified for special education. Using such an individualized approach, one can identify the child's specific difficulty and arrange teaching techniques and materials geared to the level and severity of the learning problem.

For example, instruction might be aimed at developing an ability to complete assigned work. In this instance, attention is focused on tasks such as reading and understanding instructions, planning what and how and the order of what is to be done, organizing and preparing the materials needed, and developing copying skills (accuracy and fluency of letter formation; reading and saying what has to be copied, saying to oneself as one copies, then checking for accuracy). One requirement of remedial teaching on a withdrawal basis is that it be closely related to and applicable to the regular classroom situation. For this reason, there must be very close association and cooperation between the classroom teacher and the remedial teacher. In addition to the regular remedial instruction the child is receiving, the regular teacher must be alert to any difficulties which may arise in the presentation of lessons, so that the remedial teacher may provide much needed reinforcement to remove a block to learning. Remedial teaching, especially when introduced at an early age (age 6 or 7 years) can result in as high as 82 percent recovery (Vernon, 1970).

There are children whose learning difficulties are not specific to one area but are more pervasive. For these children, the remedial-withdrawal program, three or four times per week may be insufficient. For children, within this category, a part-time special class or half-time withdrawal arrangement is perhaps the best alternative.

Part-time special class - part-time regular class: This type of program may be arranged for either children in the regular class, or those enrolled in special classes. For the child in the regular class, it may consist of up to half day instruction by the special education teacher. For a specified period each day, the child moves to the special class to receive extra instruction in the academic area(s) presenting difficulty.

For the child in the special class, it may mean leaving the special class, where specialized instruction is provided in all the basic skills, and attending regular classes for physical education, art, music, social studies or science.

In either case, it is essential that the regular and special classroom teachers establish a communicative and cooperative relationship, that they work together to resolve the child's learning problems.

Another important and frequently problematic consideration is that of time-tabling. It would be futile, for example, to schedule a child for special instruction in reading during the regular math class.

Special Class: According to Farnham-Diggory (1978), an average of 2.6 percent of children have specific learning disabilities, on the basis of the definition accepted by the United States Congress (Nov. 1976). It has already been pointed out that there are several alternatives for providing the appropriate remedial instruction for some children who have learning difficulties and, indeed, learning disabilities. However, there is a small minority, whose learning disabilities are so severe, that the segregated special class provides the least restrictive environment. In Ontario, enrollment in special learning disability classes is restricted by legislation (Ontario regulation 704/78, 35, 1-a), to eight pupils. Placement in such a class is dependent on the recommendation of a placement committee and the written permission of the parent, or where the pupil is an adult, written permission of the pupil.

The teacher must have special education certification, possess a basic knowledge of informal diagnostic techniques and an ability to present instructional programs consistent with the curriculum and appropriate to each child's type and level of difficulty. Regulations require an ongoing evaluation of the program as well as a once-yearly review to determine its effectiveness and to initiate improvements accordingly.

Whenever possible, children enrolled in a segregated special class should be provided an opportunity to join their regular-class peer group, and to follow the regular program for subjects in which they are competent, (e.g. music, social studies). Total integration should be the aim for each student in the special L.D. class but it must be managed slowly and methodically. For example, before attempting integration for any subject, the child's competency in that subject should be above the average of the regular class. This is essential because the L.D. child hasn't access to the individual instruction and attention which has been available in the segregated special class.

As the child's competencies develop, integration can be expanded to include two subjects, then three, and etc., until the child is fully integrated. Before integration is completed, it may be necessary for the teacher to provide back-up assistance, as the child may experience adjustment problems. Ultimately, the L.D. child should achieve self-sufficiency in learning, and it is therefore mandatory that the special class teacher provide the learning-disabled child with some strategies for coping with difficulties, to foster independence, and encourage confidence in her/his own ability.

Residential Schools: Several private day and residential schools for students with learning disabilities have been operating in Canada and in the United States. The government of Ontario has taken the lead in providing two government funded residential schools for students with learning disabilities - one for English-speaking students and one for Francophones. Trillium, the school for Anglophones is located in Milton, Ontario and Centre Jules Léger, for Francophones is in Ottawa.

Both schools are designed to serve the same purpose, namely, to meet the needs of students with severe learning disabilities for whom there are no suitable placement facilities within the student's own school board. Applications for admission may be submitted by school boards only and require the following documentation:

1) name and address of pupil
2) name and telephone of parent(s)
3) birthdate of pupil, who must be between the age of 6 and

21 years on the first day of the school year for which admission is requested

4) recent medical information significant in the
   (a) diagnosis of a learning disability,
   (b) recent assessment by qualified professionals indicating intellectual capacity and a profile of strengths and weaknesses in the various learning modalities,
   (c) resumé of recent standardized tests in reading, spelling and arithmetic indicating the discrepancy between achievement and assessed potential,
   (d) samples of the pupil's written work and a description of the student's oral expression,
5) a list of special classes, programs or services that have been provided for the pupil by the school board or the community.
6) a definitive statement by as many professionals as possible that the pupil requires a special residential education program.
7) substantive evidence that the Special Education Placement Committee has been unable to a) provide an appropriate program, b) purchase appropriate services from

a neighbouring board, c) obtain local or regional services,

8) the names of the school board personnel who will attend the Regional Committee meeting. (Communique, Vol. 8#2, 1979).

Detailed information about either schools may be obtained from the nearest Regional Office of the Ministry of Education.

Medical Management

Medicine has long since sought to treat the symptoms of L.D. particularly hyperactivity, and thereby increase learning behaviour.

Hyperactivity is a frequent though not exclusive symptom of L.D. and for this reason, medical approaches are controversial. Though chronic over-activity or lack of impulse control may be caused by minimal brain damage, such behaviour must be distinguished from that of the highly energetic child. In other words treatment must be reserved for the child who is hyperactive as a result of a learning disability, not the child who does not learn due to over-activity, when hyperactivity is a problem for the child, and not primarily "a problem for the adults around the child". (Ross, 1976, p. 106)

Even for the hyperactive L.D. child, there is some dispute as to whether medical approaches significantly improve learning ability.

Medical research and management has concentrated primarily on three specific areas: drug therapy, nutritional therapy, and orthomolecular therapy.

Drug therapy: Perhaps the most frequently prescribed drug in the management of so-called hyperactive children is "ritalin". Ritalin, administered in appropriate dosages, has been found to be effective in "suppressing overactivity or impulsivity and thus in increasing a child's ability to attend" (Ross, 1976, p. 96). However, in Ross' opinion, "Drugs can at best alleviate the problem that interfere with learning; they do not produce learning or magically restore all the learning that did not take place in earlier years." There is so much controversy regarding the uses and abuses and effects of drug therapy for hyperactive children that the decision to use this approach must follow careful deliberation between the child's parents and doctor. Two factors are essential in the administration of drugs to control behaviour. First, the physician must monitor the dosage, and effect of the drug on the child's physical health, sleep and growth patterns. Secondly, teachers and parent must make careful observations in order to provide data to assist the physician in the determination of frequency, amount and duration of the medication. In spite of the admonition that there is "no evidence whatsoever that medication makes children learn; the only thing that makes children learn is teaching" (Ross, 1978), experience has shown that if the child's behaviour is controlled and if the controlled behaviour is coupled with good teaching, academic gains may be significant. (Lerer & Lerer, 1977, p. 227; Eaton et al 1977, 410; Millichap, 1978, p. 570; Scranton et al, 1978, p. 209)

Nutritional Dietary Control: Another form of medical management is that related to nutritional and dietary control. In recent years, many studies sought to relate nutritional and dietary factors to hyperactivity in children. Current research into the relationship of nutrition, diet and allergies to hypersensitivity (Alder, 1978, Buckley, 1977) support earlier findings (Wunderlich, 1970, Powers, 1973-74, Hawley and Buckley, 1974) that there is an increased frequency of allergic reaction to food in hyperactive children. Rapp (1978) reported an incidence "of over 70% allergy in unselected hyperactive children" as compared with an incidence of 15 to 20% in the general population. Included in the report was the statement that "parents repeatedly volunteered that the ingestion of food colouring sugar, and/or milk, in particular continued to be followed by hyperactivity" (p. 389), Buckley (1977), and Adler (1978) agree that "beneficial behavioural alterations in some children occur as a function of nutritional control" (Adler, p. 656). At present, perhaps the most widely known diet is that of Feingold, which eliminates "all artificial food colours and flavours as well as food with a neutral asalicylate radical (almonds, apples, apricots, cucumbers, oranges, strawberries, tomatoes) (Feingold, 1976).

Orthomolecular Management: Another form of medical management is that known as orthomolecular medicine. This theory is based on the premise that "large amounts of vitamins will enable the body to fulfill its requirements". In his megavitamin treatment of 500 children, Dr. Cott (1972) reported that "most significant was the decreased hyperactivity and the improved concentration and attention span which led to improved capacities for learning" (p. 246). In follow-up study, Krippner (1975) reported that orthomolecular medicine is an alternative to drug treatment for hyperactive children.

As with any approach to behavioural and/or learning problems, the advantages vs disadvantages of each of drug, nutritional and orthomolecular therapies must be carefully weighed before a program is initiated. In doing so, alternatives must be examined. One such alternative worthy of consideration is behaviour modification.

Behaviour Modification: Prout (1977) has described different ways in which behaviour may be modified. The first is operant conditioning, in which the child is rewarded frequently and/or at specific intervals for desired behaviour. Reward, in the form of something tangible, has been found to be more effective than "free time". Prout further suggests 'environmental manipulation' which refers to structuring the environment, the actual classroom situation, the schedule and the lesson into 15 or 20 minute periods, so that the child is not forced to sit still at the same activity longer than he is capable. A variety of short, intensive activities is usually more successful than using the same amount of time on one activity. This type of program requires a high degree of organization on the part of the teacher - teaching materials must be well organized and immediately available and activities must be interesting, meaningful and applicable.

The third technique Prout describes is a 'self-regulation' technique, or as Ross (1976) describes it 'a verbal self-monitoring'.

Through this technique children are taught to "use their private speech for orienting, organizing, regulating and self-rewarding functions with the consequences of greater self-control (p. 118). Illustrated cue cards for STOP, LISTEN, LOOK AND THINK, have provided the self-directed verbal commands which help impulsive children "acquire control over their own behaviour" (p. 113).

Another technique used to modify behaviour is biofeedback such as muscle relaxation through breathing control coupled with positive verbal feedback.

Each of these four techniques of modifying behaviour is well within the realm of any special education teacher. Moreover, according to Weissenburger and Loney (1972) "behavior modification often has a direct effect on the classmates. Also behavior modification can be used as a preventive measure... A classroom teacher can be using behavioral techniques that will maximize each child's chance for success and possibly prevent some problems from developing at all" (p. 347).

Wunderlich (1973) describes the child as being hyperactive because "he is driven from within, because he copies hyperactive models, because inadequate limits are provided for him or because he is knowingly rewarded for his actions" (p. 389). If this is so, then the environment, whether home or school should be so structured and scheduled, and the management so constant and consistent that the child may be enabled to self-direct his/her own behaviour.

REFERENCES

Adler, S. Behavior management: a nutritional approach to the behaviorally disordered and learning disabled child. Journal of Learning Disabilities, 1978, 11:10, 651-656.

Buckley, R. E. Nutrition, metabolism, brain function and learning. Academic Therapy, 1977, XII:3, 321-328.

Cott, A. Megavitamins: the orthomolecular approach to behavioral disorders and learning disabilities. Academic Therapy, 1972. VII:3, 245-257.

Eaton, M., Sells, C. J., & Lucas, B. Psychoactive medication and learning disabilities. Journal of Learning Disabilities, 1977, 10:7, 403-410.

Ehly, S. & Larsen, S. Peer tutoring in the regular classroom. Academic Therapy, 1975-76, XI:2, 205-208.

Epstein, L. The effects of intraclass peer tutoring on the development of learning disabled children. Journal of Learning Disabilities, 1978, XI:8, 518-521.

Farnham-Diggory, S. Learning Disabilities. Cambridge: Harvard University Press, 1978.

Feingold, B. F. Hyperkinesis and learning disabilities linked to the ingestion of artificial food colours and flavors. Journal of Learning Disabilities, 1976, 9:9, 551-559.

Hawley, C. & Buckley, R. E. Food dyes and hyperkinetic children. Academic Therapy, 1974, X:1, 27-32.

Krippner, S. An alternative to drug treatment for hyperactive children. Academic Therapy, 1975, X:4, 433-439.

Lerer, R. J. & Lerer, M. P. Response of adolescents with minimal brain dysfunction to methylphenidate. Journal of Learning Disabilities, 1977, X:4, 223-228.

Millichap, J. G. Growth of hyperactive children treated with methylphenidate. Journal of Learning Disabilities, 1978, 11:9, 567-570.

Ontario Ministry of Education. Education in the primary and junior divisions, Toronto: Government of Ontario, 1975(b).

Ontario Ministry of Education. Elementary and Secondary Schools and Schools for Trainable Retarded Children - General. Ontario Regulation 704/78.

Post, C. Youth tutoring program. Presentation to the International Conference of the Association for Children with Learning Disabilities, New York, 1975.

Powers, W. S. H. Dietary measures to improve behavior and achievement. Academic Therapy, 1973-74, IX:3, 203-214.

Prout, H. T. Behavioral intervention with hyperactive children: a review. Journal of Learning Disabilities, 1977, 10:3, 141-146.

Rapp, D. J. Does diet affect hyperactivity? Journal of Learning Disabilities, 1978, 11:6, 383-389.

Richardson, S. Continuing advocacy for children. Presentation to the Ottawa chapter of the Association for Children with Learning Disabilities, Ottawa, 1978(a).

Ross, A. O. Psychological aspects of learning disabilities and reading disorders. New York: McGraw-Hill, 1976.

Ross, A. O. What is the 'dis' in learning disability? Presentation to the Twenty-second Annual Convention of the Council for Exceptional Children, Ottawa, 1978.

Scranton, T. R., Hajicek, J. O., & Wolcott, G. J. The physician and teacher as team: assessing the effects of medication. Journal of Learning Disabilities, 1978, 11:4, 205-209.

Vernon, M. D. Specific developmental dyslexia. In. Franklin and Maidoo (eds.). Assessment and teaching of dyslexic children, London: Invalid Children's Aid Association, 1970.

Weissenburger, F. E. & Loney, J. Hyperkinesis in the classroom: If cerebral stimulants are the last resort, what is the first resort? Journal of Learning Disabilities, 1977, 10:6, 339-348.

Wunderlich, R. C. Kids, brains and learning. St. Petersburg: Johnny Reads inc., 1970.

Wunderlich, R. C. Allergy, brains and children coping. St. Petersbury: Johnny Reads Inc., 1973.

CHAPTER III

THE LEARNING DISABLED ADOLESCENT

1. SPECIAL NEEDS OF THE ADOLESCENT

The characteristics of the adolescent with learning difficulties are essentially the same as those of the younger child. Weiss and Weiss (1978) state that "All of the general symptoms noted in the child at an earlier age appear in a somewhat altered manner in the older child". In Helping the Adolescent With the Hidden Handicap, Wilcox described the characteristics of the adolescent and their manifestation as follows:

> Hyperactivity "his urge for constant movement now is more sophisticated and is restricted to tapping(fingers, pencils or feet) grimacing or tics. Or he may have achieved such forced artificial control over his urge that he becomes rigidly tense in his whole body".
>
> Perceptual-motor impairments - "The N.H. (neurologically handicapped) adolescent may have achieved some degree of workable methods to eliminate the obvious quality of his disability in time sense, size differentiation, and distance". In other words the adolescent has learned ways and means of compensating for these difficulties.
>
> Emotional instability - "They continue to overreact to stimuli... but they are still demanding, still unaware of their impact on others, and still not

able to exercise the degree of social adjustment necessary to soften their contacts with others".

General coordination deficits - "Poor handwriting remains to show the difficulties involved in the demands for fast note-taking. Cramping and poor spacing as well as illegibility (a means to cover up spelling errors) occur frequently".

Disorders of attention - "Here, these young people divide into two groups: the 'goof-offs' (he who can't pay attention and distracts others), and the anxiety-ridden student (who just freezes and cannot concentrate for long)".

Impulsivity - "They continue to overreact to stimuli, which is usually noted in the loudest clapper, the uncontrolled sneezer, and in the one with the loudest laughter".

Disorders of memory and thinking - "This category of disabilities is most marked and recognizable at the secondary level. His school work is not organized... Time and sequence are his greatest enemies... He does not know how to arrange his study routine, so he doesn't study... He lacks the inner direction to organize".

Specific learning disabilities - "Specific language disorders are in the areas of reading, writing and spelling. For young people with these problems there should be continued spelling instruction: this is the residual difficulty that is seen most often after reading and writing are conquered".

Disorders of speech and hearing - "The N.H. child continues to present problems in articulation in adolescence. His speech is fairly clear, but a certain slurring may be noted... Spelling usually reflects this speech pattern" (Wilcox, 1970, p. 6-9).

These characteristics and their manifestation, expressed in 1970 by Wilcox are expressed in similar terms in the recent publications by Marsh, Gearheart and Gearheart (1978) and Mann, Goodman and Wiederholt (1978).

In general, according to Mann, Goodman and Wiederholt (1978) "Almost all learning disabled adolescents lack functional proficiency in language, reading, handwriting, spelling or arithmetic" (p. 23). Because of their difficulty they often disguise it by appearing to be generally disinterested in school and consequently are labelled as being lazy, not trying hard enough and not motivated. Repeated academic failure is bound to incur other problems such as depression, feeling of mental inferiority, damaged self-concept, a negative attitude towards themselves and society and an inability to make accurate social perceptions and healthy adjustments at a time when those very qualities are important to one's maturation. Cruickshank (1978) states that "If the learning disabled child enters pre-adolescence or adolescence with these perceptual processing deficits still as dynamic influences and issues to be coped with, then adolescence, never a really easy time of life, will be a period of significant difficulty and one of constant potential crisis" (p. 1). At a time, when a young person is trying to deal with the problems of identity and sexuality, with the problems of social values and peer culture, with child-adult conflict, it is devastating to have added to all this, learning problems, which are not being recognized or provided for.

Recognition of learning difficulties at the secondary level is a complex problem because by this time, adolescents have developed many secondary behaviours to conceal their perceived inadequacies. Thus it becomes very difficult to determine whether indeed the learning problem is due to lack of interest, lack of motivation and application or whether indeed there is a true learning difficulty. To complicate the identification problem, there are few tests at the secondary level, which make it possible to differentiate learning abilities or disabilities. Ysseldyke (1978) questions the diagnostic practices that attempt to isolate discrete abilities and disabilities and their relationship to learning in the adolescent as compared to learning in younger children. "We do not know to what extent abilities if they exist and develop into adolescence have the same relationship to learning that they purportedly do in the younger years" (p. 126). According to Ysseldyke, a task analysis approach is still the best diagnostic procedure because it focuses on a specific problem area and yields information which provides the starting point for practical and relevant instructional procedures and materials.

At the secondary level, significant discrepancy between ability and achievement levels seems to be generally accepted as the first criterion in the determination of a learning difficulty. Significant discrepancy is "generally accepted as an achievement" (Enfield). The discrepancy is generally evident in 1) oral expression, 2) listening comprehension, 3) written comprehension, 4) basic reading, 5) reading comprehension or 6) mathematics. According to some authors, "spelling is a more sensitive indication of a language handicap because fewer means of compensation are available and because poor spelling may persist past maturity... The task of detecting spelling errors was extremely effective in discriminating learning-disabled students from normal students" (Hammill, 1978, p. 55). Written expression then, in the form of essays, notes, assignments, is probably the best evidence of a learning difficulty because it shows the student's inability to organize and sequence her/his thoughts, to express those thoughts in a logical, coherent fashion and to physically cope with the task of committing thoughts to paper. A spelling test, coupled with an example of the student's creative writing and the student's written reconstruction of a story which has been read to her/him would provide the initial step in the diagnosis of a specific learning difficulty. Individual intelligence tests as well as tests of listening comprehension would provide an indication of a student's ability or capacity to achieve. The suggestion is offered by Baker and Kauffman (1978) that the Lorge-Thorndike Intelligence Test "can serve as a screening measure that is easily administered to large groups" if the teacher observes "the discrepancy between a child's verbal and performance (non-verbal) I.Q. scores" (p. 551). Students having high discrepancy scores (the numerical difference between verbal I.Q. and non-verbal I.Q.) on the Lorge-Thorndike could then be referred for further testing. This is practical information, since the Lorge-Thorndike is routinely used as a measure of intelligence in many schools and at different grade levels. Although to date, there is no known research on the use of the new Canadian version of the Lorge-Thorndike as a screening instrument, it would seem profitable for teachers to look closely at students who showed high discrepancies between their verbal and non-verbal I.Q. scores and refer those students for further individual testing.

Ysseldyke (1978) states that "For the child above nine years of age, intervention will need to be thought of as mainly compensatory rather than corrective... since basic processing ability is by this age as developed as it ever will be" (p. 118). Similarly, Wepman is quoted as advocating that "Before adolescence the programs are developmental; after adolescence they are compensatory" and therefore, "adolescent students should be taught to use their best skills in coping with the academic demands of secondary programs" (Sitko & Gillespie, 1978, p. 154). In view of these statements, program needs at the secondary level are very different from those at the elementary level. It is generally accepted that the needs of the adolescent include compensatory assistance in academic skills, survival skills and daily maintenance in the mainstream of school and society. Irvine, Goodman and Mann (1978) sum it up in the following: "Programs for secondary level learning-disabled students are necessarily incomplete if they do not provide for both the continuing academic education and vocational training needs of the student. Education programs for the secondary learning-disabled student fail if they do not provide comprehensive preparation for the world of work" (p. 265). They go on to say that, "... while high-school learning-disabled pupils may also be capable of learning much academically, their academic time clocks are running out" (p. 267).

In addition to the need for academic and career or vocational skills, the adolescent has many self-needs--most of all, a need to feel good about her/himself. In order to satisfy this need, the adolescent must be provided with some kind of work or some type of skill which she/he can perform well and an opportunity to develop unique talents. At the same time alternative school programs should be available to re-interest the student in learning, to provide opportunities for career or vocational training and talent development.

Further to the self-needs are the socialization needs. Adolescents, who throughout the elementary grades have experienced academic difficulties and successive failures and have developed undesirable behaviours, are often rejected by parents, teachers and peers. They become 'loners' and stay on the periphery of social situations because of a general feeling of inadequacy. It is important that adolescents be counselled into situations where they will acquire socialization skills. Knowing what to do and how to do it, what to say and how to say it, how to react or respond normally instead of aggressively or defensively, will help a youth feel more comfortable and secure in social situations.

Adolescents with specific language disability or with disability in social perception often have poor conversational skills and a faulty perception of voice intonation or facial expression.

For parents, teachers, counsellors and the adolescents themselves, Gordon makes three important statements which should be carefully considered by anyone working with adolescents.

> "... I want to reemphasize that most of the young people we have to worry about are depressed and feel badly about themselves" (1974, p. 31).
>
> "It is not the handicap itself that will limit our N.H. adolescents but it is their attitude about themselves that will determine whether they will go ahead successfully or not" (1970, p. 51).
>
> "Most of all it (being masculine for boys and feminine for girls) means feeling secure. It means accepting yourself for what you are and having faith in what you can become" (1973, p. 43).

The life pattern of a youth can be changed if that youth knows someone who can be counted on for help when it is needed. Help may refer as much to self-needs as it does to academic needs.

Authors (Marsh, Gearheart & Gearheart, Mann, Goodman & Wiederholt, Anderson, Wilcox, Berman, De Witt, Washburn, Poremba, Gordon) who have been involved with adolescents, both learning-disabled and non-learning-disabled, have many valid suggestions for providing the success experience that these young people need. Among their suggestions are the following:

- get them out of school for awhile. It is unfair to force kids to attend schools, when the schools are not prepared to handle their individual differences. The early school leaving policy of the Ministry of Education provides the opportunity to release a child to engage in any alternate learning experience.
- apprentice them to an artist, to a runner, to a swimmer, to a cabinet maker, to a dressmaker, to a tailor, to a gardener, to a plumber, to a mechanic, to a hairdresser, etc.
- teach them new things - to bowl, to play chess, to play cricket, to play field hockey, to dance, to cook, to do make-up, etc.
- take them places - on hikes, on canoe trips, on camping trips, to boat shows or races, to science fairs, etc.

- involve them in activities - dramatic groups, orchestra, basketball, hockey or football teams, even if it means that they are needed only to check and look after the equipment.
- make schools more attractive to the student by accepting her/him as an individual with a unique personality and need, and by providing opportunities so that student may develop positively in academic, career, vocational, social and self pursuits.

To provide this type of appropriate learning environment requires support for and from the home, for and from society, and most of all for and from the schools. Teachers in secondary schools need to become more child-oriented rather than content oriented or as De Witt (1977) states "The path always leads one back to the need for knowledgeable, experienced and dedicated teachers as well as a philosophy that is student oriented rather than teacher oriented" (p. 78). Teachers who work with students with learning difficulties need to be perceived by the students as people who are reliable and important. Furthermore Mauser (1974) states that the individual who works with the adolescent needs to:

1. "communicate acceptance both emotionally and physically",
2. "expect the best",
3. "build and develop the individual's self-concept",
4. "establish clearly defined limits",
5. "develop the ability to be a 'people watcher'",
6. "remember that Rome was not built in a day". (p. 397)

In summary, not only are the learning abilities and learning styles of the adolescent very different from person to person but so also are their needs, their motivation and their personal goals. To cope with the education of the adolescent with learning difficulties places heavy demands not only on special education personnel but more specifically on regular classroom teachers, who have not been specifically trained to recognize, understand or program for students with such unique demands. Among the recommendations for teachers working with adolescent, learning or non-learning, delinquent or non-delinquent, was one which would make a course in learning disabilities, recognition and programming mandatory for certification of all teachers, whether elementary or secondary (Collum, 1974, 72-3, Berman, 1974, p. 42). Close cooperation between special education and subject teachers is necessary to promote a sensitive and responsive awareness of the adolescent's needs.

Curriculum and program goals also need be reassessed and redefined in order to meet the changing demands of society. As Mauser (1974, p. 399) emphasizes "Reeducation, as far as is required by employment policies of business and industry, is encouraged so that a high degree of literacy is now a prerequisite for positions in which literacy is not functionally necessary". Perhaps many learning difficulties, as well as emotional and behaviour problems are created by forcing students to stay in school to acquire academic skills, when they might be more motivated and more successful if they were working as apprentices in the area of their interest. As Brutten (1974, p. 18) explains, "Our attitude needs to be one of distinct hopefulness that if we can provide them with gratifications, a sense of success, a feeling of worth, they will go forward and become productive citizens and happy individuals". Sol Gordon, who has spent much time counselling adolescents says "It is never too late to start" (Gordon, 1974, p. 83).

REFERENCES

Anderson, L. E. Helping the adolescent with the hidden handicap. Los Angeles: Academic Therapy Publications, 1970.

Baker, A. M. & Kauffman, J. M. Screening L.D. children with the Lorge-Thorndike. Academic Therapy, 1978, 13:5, 549-552.

Berman, A. Delinquents are disabled. In Kratoville (ed.). Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Brutten, M. Characteristic symptom patterns of learning disabled adolescents. In Kratoville (ed.). Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Collum, J. The learning disabled adolescent. In Kratoville (ed.) Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Critchley, M. Developmental dyslexia. Springfield: Charles C. Thomas, 1964.

Cruickshank, W. Adolescence and learning disabilities: a time between. In Learning Disabilities: Information Please. Quebec Association for Children with Learning Disabilities, Montreal, 1978.

De Witt, F. B. Tear off the label: the older student and S.L.D. Academic Therapy, 1977, 13:1, 69-78.

Enfield, M. L. The Hidden Handicap. Pamphlet distributed by the Missouri Association for Children with Learning Disabilities. St. Louis: Hansen Publ. Inc. (no date).

Gordon, S. Sex problems in the child with learning disabilities. Presentation to the Annual Conference of the Association for Children with Learning Disabilities, Toronto, 1969.

Gordon, S. Renewing a negative self-image. In Anderson (ed.). Helping the adolescent with the hidden handicap. San Rafael: Academic Therapy Publications, 1970.

Gordon, S. Facts about sex for today's youth. (Revised edition). New York: John Day Company, Inc., 1973.

Gordon, S. Other psychological and social problems of learning disabled youth. In Kratoville (ed.). Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Hammill, D. Adolescents with learning disabilities.

In Mann, Goodman & Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Irvine, P., Goodman, L. & Mann, L. Occupational education. In Mann, Goodman & Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Kratoville, B. L. Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Mann, P., Goodman, L. & Wiederholt, L. Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Marsh, G. E., Gearheart, C. & Gearheart, B. The learning disabled adolescent. Saint Louis: C. V. Mosby Co., 1978.

Mauser, A. J. Learning disabilities and delinquent youth. Academic Therapy, 1974, 9:6, 389-402.

Ontario Ministry of Colleges and Universities. Apprenticeship and you. Toronto: Government of Ontario, 1978.

Poremba, C. The adolescent and young adult with learning disabilities. An International Approach to Learning Disabilities of Children and Youth. Selected papers from the Third Annual Conference of the Association for Children with Learning Disabilities. San Rafael: Academic Therapy Publications, 1967.

Sitko, M. C. & Gillespie, P. Language and speech difficulties. In Mann, Goodman and Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Washburn, W. Y. Where to go in voc-ed for secondary L.D. students. Academic Therapy, 1975, 11:1, 31-35.

Weiss, H. & Weiss, M. Survival Skills for the Adolescent. Presentation to the annual conference of the Quebec Association for Children with Learning Disabilities. Montreal, 1978.

Wilcox, E. Identifying characteristics of the N.H. adolescent. In Anderson (ed.). Helping the adolescent with the hidden handicap. Los Angeles: Academic Therapy Publications, 1970.

Ysseldyke, J. E. Remediation of ability deficits: some major questions. In Mann, Goodman & Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin, 1978.

2. PROGRAMMING FOR THE ADOLESCENT STUDENT

As early as 1972, the Ministry of Education for Ontario stated its policy with respect to students with exceptionalities in a special publication entitled "Provision for exceptional students in secondary schools". The following excerpts are from that publication:

> "A major goal in the organization of Special Education is the integration of all exceptional students who might benefit from placements within regular programs."
>
> "The basic elements of the secondary school pattern (i.e. credit system, broad areas of study, adaptation of courses of study and individual timetables) facilitate the provision of programs for individual students with unique educational needs. Minor adjustments enable increased numbers of exceptional students to participate in regular courses."

Exceptionalities were divided into four broad areas which included behavioural, intellectual, physical and communication exceptionalities - the area of exceptionality, most related to the intent and content of this handbook, since it includes learning disabilities. The policy on courses states:

> "A student's program should schedule subjects that the student who is handicapped can take with profit. The student also might attend courses in a subject that he likes and from which he feels he can derive benefit, although the regular evaluation process may not be applied." (Page 5)

Recent publications support the provisions of the 1972 document by specifying what the schools should do in order to provide for the needs of a variety of students as indicated in the following statements from Circular H.S.I. 1977-78.

Secondary School Requirements.

> "The student's program should reflect his state of development. As well as his expectations of achievement."
>
> "In so far as it is consistent with the financial and human resources available in a school, secondary school organization should allow each student to pursue a program suited to his individual needs and aspirations. The opportunity for each student to work at his own level - to reach ahead in some subjects

and to engage in more basic work in others - can be provided..."

"...there must be careful and perceptive adaptation of curriculum guidelines..."

"Flexibility in scheduling should enable the particularly gifted students as well as those with learning problems to take courses from which they can derive maximum benefit."

"Traditionally, schools have met the needs of students with learning difficulties through the services of special education, special vocational schools or occupational or composite schools." (Page 2)

"Each student should have the basic skills that will allow him to continue his education with competence and confidence." (Page 4)

"Each student should be advised to take courses that will allow him to capitalize on his abilities, interests, needs and educational goals without unnecessarily limiting his future occupational and educational choices." (Page 4)

"Minor adjustments in classroom procedure or

> school routine will enable some exceptional students to participate in regular courses."
> (Page 5)

In the secondary school, there is a core of students with learning difficulties, whose problems were identified and for whom special educational intervention was made at the elementary level. Although some may be able to manage successfully - there are many, who because of reading, writing, spelling and/or attentional deficits are unable to cope with the quantity of material to be read, the notes to be taken, the essays and exams to be written or to listen and comprehend the usual forty-minute lecture-type lesson. There are many too, who, because of a type of perseverative mental set find it extremely difficult to switch classes - to turn off science and to turn on English literature. The organizational structure which includes the design of the building itself and the timetabling arrangements may also present major problems to the student who has organizational difficulty.

In addition to these groups, there are many students, who, through compensatory mechanisms have been able to mask their learning difficulties until the time when written examinations are required. A teacher may find at the end of an examination that a student who has participated and contributed to class discussions, is unable to pass a written examination.

Absolute criteria for selection of secondary school students with special learning difficulties have never been firmly established. In general, three factors are included, 1) average intelligence, 2) absence of physical or sensory impairments such as hearing, vision, etc and 3) significant discrepancy between achievement and potential. For consideration are the criteria established by Wiederholt and Hammill and reported by Grill (1977, 1978).

Wiederholt's criteria include:

"1. Academic achievement in any area at or below second grade.
2. Measured I.Q. of not less than 85.
3. Hearing and visual acuity within normal limits, after correction.
4. No severe emotional disturbance.
5. No chronic school attendance problems." (Grill, 1977, p.24)

Hammill's criteria include:

"1. measured I.Q. of 90 or better.

2. serious academic achievement problem.

3. no other diagnosed major handicap." (Grill, 1978, p. 392)

Grill goes on to say that, "With regard to academic achievement Hammill specifies that pupils in eighth grade and above must perform at a grade equivalent of 4.5 or below in order to meet the criterion of serious academic deficiency".

Marsh, Gearheart and Gearheart (1978, p. 60-61) have established the following criteria:

1. "The child does not achieve commensurate with his or her ability (in the defined areas) when provided with learning experiences appropriate for the child's age."
2. "The team (evaluation team) determines that a child has a severe discrepancy between achievement and intellectual ability in one or more of these areas:

   Oral expression, Listening comprehension, Written expression, Basic reading skill, Reading comprehension, Mathematics calculation or reasoning."

3. "The team may not identify a child as having a learning disability if the severe discrepancy may be attributed to a visual, hearing or motor handicap, mental retardation, emotional disturbance or environmental, cultural or economic disadvantage."

Examination of the criteria, specified by Wiederholt, Hammill, and Marsh et al, may assist a school to establish its own set of criteria, which must include a significant educational discrepancy between actual level of performance and estimated intellectual potential. With respect to discrepancy measures, Grill (1977) cautions the following:

> "The principle of disparity is frequently defined as a two year discrepancy between measured achievement and actual grade placement. Yet this operational definition is as limited with regard to adolescents as the notion of mental age applied to adults. To label a tenth-grade pupil as learning disabled because he reads at seventh - or eighth grade is as meaningless as to label a 30 year old retarded because he has a mental age of 25 years." (p. 26)

Using the above criteria, a school can identify students with mild to severe learning difficulties. Although the definite incidence of learning disabilities among adolescents is not known, Mann, Goodman and Wiederholt (1978, p. 43) estimate the range to be at least one to three percent and not more than seven percent. Frequently placements in special programs are over-inclusive. For example, Grill (1977, p. 25) has reported that only 45 of 161 students who had already been identified as learning-disabled, met the criteria established by Wiederholt..

> "Many of the identified learning-disabled adolescents did not exhibit even the commonly accepted two-year lag between grade placement and level of achievement... Pupils identified as learning disabled were not achieving sufficiently below grade level to warrant inclusion in the learning-disabled group..." (p. 26)

To design instructional programs for the adolescent with learning difficulties requires a basic understanding of what the program should do. Since the goal of education for the adolescent with learning difficulties should be the same as for adolescents without learning difficulties, namely, to "help each student develop to the maximum his or her potential as an individual and as a member of society" (H.S.I. - 1977-78, p. 1) consideration must be given to the following: arranging the environment to provide for continued learning; providing for the upgrading of academic skills; providing opportunities not only for academic but also career and vocational education; maintaining the student in the educational mainstream and developing an accepting and responsive attitude on the part of the total school staff.

Although, in some areas, there are vocational or occupational secondary schools, which provide for the needs of some of the adolescents with learning difficulties, the regular high school is not designed to provide more than academic opportunities. In these types of schools two distinct models have operated - the resource room and the self-contained class. The fundamental difference between the resource room and the special (self-contained) class is that the student attends the resource room on a part-time basis and remains for a good portion of the day in the regular classroom. (Leviton, 1978, p. 593) From his review of the two models, Leviton (1978(a)) concluded that "the resource room improves academic achievement and social competence skills with none of the deleterious effects of the segregated, self-contained special class." (p. 411)

Although the special class model may be necessary for a limited number of adolescents with very severe learning difficulties, the resource room model is preferred because according to Leviton (1978, p. 597) it

1. improves academic achievement
2. improves social behaviour
3. does not require costly psychological or psychiatric examinations and resultant time delay
4. does not require a stigmatizing label
5. services many children, thereby reducing the stigma for an individual student
6. eliminates the problem of reintegration
7. permits service to a larger number of children
8. is administratively conducive to the individualization of regular instruction.

Students enrolled in the self-contained class should be given opportunities to be part of the mainstream, in those areas, in which they may have well developed skills. For example, a student with musical abilities could become a contributing member of the school band. The programs in each of these models differs significantly because of the nature of the difficulties of the students involved. Resource room programs focus on keeping the student in the mainstream and developing her/his academic skills so that s/he may graduate to post secondary education or the job market. The focus of the self-contained class is to provide the student with a functional level of basic skills, to teach the student to capitalize on the areas of strength, which may maximize her/his employment potential.

Within the resource room model, there is ample opportunity for program adjustments which will meet the needs of most students. A recent survey of programs for serving the learning-disabled adolescent has been completed by Deshler, Lowrey and Alley (1979) and reported in the March issue of Academic Therapy. Analysis of the data from 98 secondary learning disabilities programs suggested five distinct approaches to serving the learning-disabled adolescent:

1. Functional curriculum approach. "The major emphasis of this approach is to equip students to function in society." (p. 391). The regular curriculum of the secondary school is considered inappropriate for these students, most of whom are in self-contained classes. Thus a new curriculum is devised to meet the student's basic needs -- consumer information, filling out applications, survival skills which will prepare them

for the world of work rather than school. Guidance and counselling with respect to the student's self identity as well as career and vocational identity are major components of this approach.

2. Basic skills remediation approach. "The major emphasis of this approach is to provide remedial instruction of basic skill deficits in areas of reading and mathematics at the student's instructional level." (p. 392). Remedial programs similar to those used in elementary schools are used. Although basic skill instruction is important and should increase literacy, the limited time available for remedial instruction may not change a student's level very significantly. Burt (1974) says: "By the time we get these youngsters, it is too late to get back into the remediation aspects. What we want to do is develop adaptive skills." (p. 59). Ysseldyke (1978, p. 118) and Wepman as stated by Sitko and Gillespie (1978, p. 154) and Schoefield (1978, 430) concur with the idea of teaching adaptive, compensatory or coping skills.

3. Tutorial approach. "The major emphasis of this approach is to provide instruction in academic areas"

(p. 393). The primary responsibility of the special learning disabilities teacher is to help the student with course content so that she/he may remain in the regular classroom and meet the requirements set down by the subject teacher.

4. Work, study approach. "The major emphasis of this approach is to provide instruction to the student in job and career related skills and on the job experiences" (p. 394). This approach is appropriate for those for whom the regular curriculum is judged inappropriate. Students attend school for half the day, the other half of each day is spent on the job. School time is devoted to developing the academic skills, which are career or job related - reading, writing, spelling and math as they are related to the use of career or vocational materials such as forms, instructions, letters, symbols, newspapers, advertising, etc. Guidance and counselling are necessary components to provide the student with information and 'know-how' as well as to assist in placement.

5. Learning strategies approach. "The major emphasis of this approach is to teach students how to learn

> rather than to teach students specific content."
> (p. 395). For the student with mild to moderate learning difficulties, who may have the potential for post secondary including college education this approach is critical because students are taught how to use their best abilities as well as specific strategies to cope with the regular curriculum content."

The competent resource or learning disabilities teacher, although perhaps preferring one approach over another, should be able to implement whatever approach best meets the needs of the student.

Since the success of any instructional program depends primarily on the personal and professional qualities of the teacher, the resource or learning disabilities teacher has an important role to perform. First, the teacher must be informed on the many types of problems encountered by an adolescent with learning difficulties; the teacher must be able to respond to those needs through the instructional strategy, the instructional environment and the materials; the teacher must be familiar with the entire curriculum, so that she/he may be able to assist regular classroom teachers in the use of specific strategies or techniques and so that she/he may be able to teach the students, who need the help; the resource or special teacher must be able to work cooperatively with subject teachers, to be helpful to them and yet not appear critical of them; the teacher must also be aware of the problems and recognize the constraints of the teacher in the regular classroom of 30 or more students. This special teacher also conducts an initial screening to determine a student's learning needs and will serve as a member of the placement team, which determines the appropriate instructional program.

To operate a successful program for adolescents with learning difficulties requires a specific set of guidelines and objectives. The Ottawa Board of Education has operated a very successful special education programme on the resource room model in its secondary schools since the 1975-76 school year. The guidelines under which that program operates are included with the permission of the coordinator of Special Education for the Ottawa Board of Education (See Appendix iv p.)

Analysis of the preceding information should enable the special teacher to prepare the organizational structure or framework, which provides an environment in which the student can maximize her/his opportunities for academic, career or vocational education and where that student will be accepted and special needs are responded to, while continuing to participate in the mainstream. The organizational framework must include provisions for individualizing the time table for each student, in that courses are followed at the appropriate level. Another organizational feature is to schedule for students with learning difficulties, a regular period in the resource room. Regular may imply daily, or twice to three times per week, depending on the nature and severity of the student's learning problem. To allow for a regular daily period with the special education or resource teacher, it is often wise to encourage the student to take a lessened course load. (Seven courses instead of the usual eight.) In addition to scheduling students for regular resource room periods, the teacher must organize half-day programs for some students in a nearby vocation or technical school alternatively, set up half day apprenticeship programs with trades and business people. Other organizational features are directed to the identification and selection process and the procedures by which students enter or leave the program. In addition to the organizational aspects of a program for students with learning difficulties, are the educational considerations which demand provision for continued learning, remediation of academic skills, examination and evaluation. Special instruction should be directed to the student's immediate learning needs, keeping in mind the student's identified learning abilities as well as difficulties.

Providing for continued learning so the student may be maintained in the regular classroom requires close cooperation between the special and the classroom or subject teacher. In general, teaching a student to by-pass her/his difficulties by using coping or compensatory strategies is perhaps the best approach, at the secondary level, since by doing this you are providing the student with strategies for learning which are applicable to real life situations. There are many ways in which a teacher may provide the necessary help for a student.

General problems:

(a) Check to see that the student has understood the assignment as well as the lesson material. Clarification of the intent of the assignment as well as the manner in which responses are to be recorded may be all that is required. On the other hand, the lesson may not have had meaning for the student because of a lack of prerequisite skills or because of poor presentation. The procedure in that case will call for reteaching, using an analytic approach to the problem.

(b) Help students organize their homework, essays, assignments, etc.

(c) Provide a quiet place where a student may complete assignments without disruption.

For students with reading difficulties:

(a) Teach the vocabulary of the subject as well as difficult or unfamiliar words.

(b) Teach the language structure of the subject, especially mathematics and science.

(c) Read questions before reading the text.

(d) Prepare a guide or outline, indicating the specific information which is required from a reading assignment.

(e) Teach students to read to answer who, what, where, when, and why questions.

(f) Teach students to make maximum use of chapter summary, headings, bold face type, italics of topic sentences, glossary, and index and table of contents.

(g) Read texts to students and have them answer orally. Responses may be recorded on tape or by another student. Students and volunteers can provide a valuable service in this area.

(h) Reading materials (texts, novels, plays, etc.) might be recorded on tape. Volunteers have been able to provide a taped library of books which appeared on the English course. Reading materials are available on tape from the Canadian National Institute for the Blind and might be borrowed for a student who has a specific reading difficulty.

(i) Use audio-visual aids to supplement lessons.

For students with spelling and/or handwriting problems.

(a) Give written assignments within the level of a student's proficiency in writing and spelling and project assignments within the level of a student's potential.

(b) Allow notes to be written in point form rather than sentence style.

(c) Accept assignments or reports orally or on tape.

(d) Encourage oral participation in class.

(e) Provide typing facilities for students whose written work is illegible and, if possible, teach the student to type.

For students with problems in mathematics.

(a) Use a task analysis approach since mathematics skills are easily identifiable.

(b) Provide a basic course in mathematics which will include day-to-day needs, (totalling bills, making change, balancing accounts, etc.).

(c) Allow the use of tables, charts, calculators, etc. to students who have organizational, directional or memory problems.

Remedial teaching at the secondary level should be task specific. It may mean concentrating on the vocabulary of a particular subject or story, so that the student can pronounce and read the words correctly as well as understand their meaning, or it may mean spelling instruction, directed to accuracy in written spelling of very high frequency words. Remedial techniques, such as the Orton-Gillingham or the Fernald approach, teach students to utilize all learning modalities in their efforts to attain mastery learning. Other useful techinques include the rehearsal technique which reinforces learning through vocalizing or saying aloud what she/he has read, seen or heard. Teaching a student to make notes as she/he reads is an aid to reading comprehension and memory just as jot notes are an aid to listening comprehension. The object of teaching remedial techniques is not only to remediate a specific task component but to provide the student with a technique or strategy which by its very nature will enable the student to overcome or by-pass the learning difficulty and which may be applied to new learning situations.

Frequently, one of the major problems of students with learning difficulties is written examinations. As previously mentioned, this may be the teacher's first indication of a learning problem. Since students with learning difficulties are often notoriously poor spellers, the value of the content of an examination is diminished significantly when marks are deducted for spelling errors. If, for example, a student has demonstrated that he knows the subject content on a geography examination, spelling errors should be overlooked. As Thompson (1971) points out, "I would teach spelling and teach it at a low level but I would be careful not to penalize what a kid has to say on account of spelling." (p. 2).

Students with learning difficulties, especially those related to organizational and time concepts, need counselling in preparation for examinations. They must know how to organize their material for studying, how to set up a study timetable for themselves, how to study and lastly how to write an examination. Students should be provided with some understanding of the scope of the examination, the length of time given, the type of question asked and the expected response. Other examination considerations for students with learning difficulties include:

- accept point form answers where possible
- allow longer time for examination
- provide a quiet place for the student to write
- read questions to the student or have the questions recorded on tape
- allow answers to be tape recorded
- provide oral examinations for severely learning disabled students
- accept oral contributions or project work as possible sources for evaluation.

It is possible then, within the context of a secondary school to provide for the student with learning difficulties, and environment, which will allow that student to utilize her/his learning strengths in order to maximize learning opportunity. Through the cooperation of staff members, vocational or technical schools, and the industrial and trades people, it is possible for the special teacher to provide a variety of programme options, which will motivate the student to continue learning and give that student the satisfaction of knowing that there are things that she/he can do successfully. To operate a successful program requires a teacher, who firstly appreciates the problems of adolescence and especially the problems of the adolescent with learning difficulties.

The teacher must be dedicated to the concept of individualized instruction for only through individualization is it possible to provide the necessary arrangements and adaptations which are required for appropriate programming to capitalize on the learner's strengths. The teacher, who is the crucial factor in the success of any specialized program, must have the respect of the students and the staff.

The following quotations indicate the direction and intent of programs at the secondary level for the adolescent with learning difficulties:

> "By capitalizing on interests and permitting the curriculum to become a little more flexible, many children can succeed and find learning pleasant for the first time." (Thompson, 1971)
>
> "... teach him to feel good about some kind of work, some skills he can perform, and you will find a student eager to read, write, and spell, in order to get 'that job' or go to 'that class' or 'that school'". (Washburn, 1975, p. 35)

REFERENCES

Burt, B. Prescriptive programming for the juvenile delinquent. In Kratoville (ed.). Youth in trouble. San Rafael: Academic Therapy Publications, 1974.

Deschler, D., Lowrey, N. & Alley, G. Programming alternatives for L.D. adolescents. A nationwide survey. Academic Therapy, 1979, 14:4, 389-397.

Fernald, G. Remedial techniques in basic school subjects. New York, McGraw-Hill, 1943.

Grill, J. J. Identification of learning-disabled adolescents. Academic Therapy, 1977, 13:1, 23-28.

Grill, J. J. School programming for adolescents. Academic Therapy, 1978, 13:4, 389-399.

Leviton, H. The resource room: an alternative (1). Academic Therapy, 1978, 13:4, 405-413.

Leviton, H. The resource room: an alternative (2). Academic Therapy, 1978, 13:5, 589-599.

Mann, P., Goodman, L. & Wiederholt, L. Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Marsh, G., Gearheart, C. & Gearheart, B. The learning disabled adolescent. Saint Louis: C. V. Mosby Co., 1978.

Ontario Ministry of Education. Provision for exceptional students in secondary schools, 1972.

Ontario Ministry of Education. Secondary School Diploma Requirements: Circular H.S.I., 1977-78.

Orton, J. The Orton-Gillingham approach. In Money (ed.). The Disabled Reader. Baltimore: Johns Hopkins Press, 1966.

Schoolfield, W. Limitations of the college entry L.D. model. Academic Therapy, 1978, 13:4, 423-431.

Sitko, M. & Gillespie, P. Language and speech difficulties. In Mann, Goodman and Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin Co., 1978.

Thompson, A. Some current thoughts on the learning disabled adolescent. From a professional... what should be done. The Post, 1971, 8:2, p. 2.

Washburn, W. Where to go in voc-ed. for secondary L.D. students. Academic Therapy, 1975, 11:1, 31-35.

Ysseldyke, J. Remediation of ability deficits: some major questions. In Mann, Goodman & Wiederholt (eds.). Teaching the learning disabled adolescent. Boston: Houghton-Mifflin, 1978.

CHAPTER IV

REMEDIAL PROCEDURES

1. READING

"Reading is the most complex and difficult neurological assignment a person is called upon to perform in his lifetime, exceeding in difficulty even the involved task of learning to speak." (Crosby & Liston, 1968; p. 13) Its complexity is due to the fact that the processes "1) decoding writing into the sounds of speech and 2) decoding the message" (Betts 1971; p. 230) are done simultaneously. Regardless of its complexity, reading is essential to function in virtually any role of modern society.

The Ontario Ministry of Education (1975(b)) has outlined specific aims and criteria for students in the primary and junior divisions. Although it is expected that children receive rudimentary instruction in reading during the primary grades, reading is a skill which continues to develop throughout life, taking on different aspects and emphasis at different stages along the continuum. In the primary grades, instruction is directed to developing and acquiring skills of the learning to read process. Emphasis in the junior grades is on vocabulary development and comprehension skill, for at this stage, a student is reading for understanding to interpret what is presented on the printed page. Advanced skills are directed to reading in the content subjects, to critical and evaluative reading, the development of study skills, and to the acquisition of speed and flexibility in reading.

To develop reading ability maximally requires daily practice, as does any skill which is dependent on learning a code, such as playing the piano or typing.

Few other subjects have been as thoroughly researched as reading. Concern over large numbers of children who experience difficulty in reading has led to research in virtually every facet of reading instruction.

Numerous experimental studies (i.e. Chall, 1967; Bond and Dykstra, 1967; Dilling and Capell, 1975) have concurred in the finding that a phonic/linguistic approach to reading instruction produced pupils with superior word study, word recognition and paragraph comprehension skills at the end of first grade. No significant differences were evident in rate and accuracy of oral reading.

Although the phonic/linguistic approach provided superior results, one cannot yet categorically state that the phonic/linguistic approach to reading instruction would provide for all reading requirements and thereby be suitable for all children.

Research findings reported by Karlin (1967) and Harris (1969) suggest that "differences among teachers are far more important than differences among methods and materials in influencing the reading achievement of children". Glock (1972) is of the same opinion: "It is time for teachers to redirect their thinking about the teaching of reading. It is not the method or approach that makes the difference, it is the individual teacher. Teachers are more important than the quality of the facilities, the quantity of the materials and equipment or the level of financing." (405-406)

The skill, creativity and dedication which a teacher brings to reading instruction seem to have greater bearing on achievement than any other factor. The home environment also appears to influence reading ability, as Coleman (1975) points out, "reading achievement is more fully an outgrowth of home influences than are either of the other two subjects (literature, science) and less a function of what takes place at school".

Although parents and teacher must accept the major responsibility for a child's attitude towards school in general and reading in particular, there are other factors which also contribute to reading difficulties and/or disabilities. Learning to read, like all learning experiences, is affected by factors such as intelligence, maturation, physical health, visual and auditory acuity, emotional stability, experiential background, educational opportunity and school attendance, readiness and motivation to learn. In the case of specific reading difficulties and/or disabilities there is the additional factor of heredity where there is a tendency among family members, particularly male, to have extreme difficulty in learning to read, despite average or above average intelligence and achievement in other areas. Their difficulties are manifested in the following ways:

1) slow rate of reading
2) reading word-by-word
3) confusion of words such as the, they, them, there, who, when, where
4) poor ability to discriminate visual likenesses and differences in the absence of any visual acuity defect (mane-name; almost-among, always-away, boy-dog, who-how)
5) extreme difficulty remembering the printed form and its spoken counterpart, whether words, letter symbols or word parts
6) poor ability to make the visual-spoken association of words in different contexts and in different sizes and types of print and even from one page to the next
7) difficulty in discriminating, sequencing or blending sounds or word parts
8) directional confusion (b-d, p-q, m-w, u-n; was-saw; no-on) long after these confusions should be sorted out
9) gross mispronunuciation of words

10) omission or insertion of words and letters

11) many repetitions of words or groups of words when reading orally

12) inability to remember what is read

13) inability to understand what has been read.

Readers who exhibit many of these characteristics, long after the initial phase of learning to read and in spite of appropriate instruction are generally classified as remedial readers.

In order to respond to individual differences and to specific difficulties, a total reading program in any school system must be four-fold in nature. Programs are generally classified according to the following: developmental, corrective, remedial and adapted. The following description of each type of program has been derived from the definitions and descriptions provided by Harris (1961), Schiffman (1966), Kalugar and Kolson (1969), and Otto, McMenemy and Smith (1973).

Developmental reading: The developmental reading program is the responsibility of every teacher. Systematic instruction is provided at all school levels and is a continuous on-going process provided for in the regular curriculum. The child who is reading at a level commensurate with her/his capabilities is considered a developmental reader.

Corrective reading: The corrective reading program is carried on within the framework of the classroom and is designed to improve activities for children who have minor or slight reading difficulties. The teacher may work with and individual, a small group or even with a class-size group, if the skill to be corrected represents a difficulty for the whole class. Special materials or specialized techniques are generally not required for the corrective reading program. The corrective reader is one who experiences slight difficulty in reading, who may be reading slightly below her/his mental age level.

Remedial reading: The remedial reading program is reserved for those pupils who experience severe difficulties in reading. The remedial reading program is generally conducted outside the framework of the regular classroom with very small groups (3 or 4) or even one-to-one tutoring, as the severity of the problem dictates. Remedial reading is reserved also for those pupils who have the capacity to learn but are unable to master the reading process without specific and specialized instruction and materials. The remedial reader is a seriously disabled reader, one who is reading far below her/his mental capacity.

Adapted reading: An adapted reading program is one which is geared to the lower learning capacity of children whose I.Q. generally falls below 90. An adapted reading program would include materials which are low vocabulary and high interest. Pupils placed in an adapted reading program are slow learners rather than disabled learners.

The total reading program should then encompass developmental reading for average and above average students in the regular classroom, supplemented by frequent corrective reading procedures for students having slight difficulties, and an adapted reading program of easier materials for children of lower mental capacity who proceed at a slower rate. To complete the program there must be specialized instruction for the severely disabled readers who read significantly below their capacity levels because of specific learning difficulties.

Placement in any of these programs must follow established guidelines outlining a specific set of criteria. Many school systems make use of standardized reading tests to determine the grade placement of pupils. Results of group administered standardized reading tests must be viewed in relation to the group on which the test was normed, and the type of reading material which comprises the test items, which may be quite unrelated to materials used in the classroom. Individually administered oral reading tests (Gray Oral Reading Tests, Gilmore Oral Reading Test, Spache Diagnostic Reading Scales) provide information in terms of grade levels, and use accuracy, rate and comprehension as determining factors. Perhaps the most useful vehicle to determine placement is the informal reading inventory (IRI) which employs classroom instructional materials and as such provides useful, relevant and applicable diagnostic information for the teacher. The IRI may be limited to identifying a pupil's instructional level or it may be extended to determining the independent reading level, the expectancy or capacity levels and information regarding vocabulary, phonic and work analysis skills.

Informal Reading Inventory - reading levels, discussed by Betts (1946), Harris (1961), Kerfoot (1965), Kaluger and Kolson (1969) and Otto, McMenemy and Smith (1973), include the following criteria:

Independent level - the level at which a child can read easily without assistance and with good comprehension. The accuracy rate (pronunciation of words) should be 99 percent and comprehension of meaning should be 95 percent. This level, sometimes called the basal level, is the level at which a pupil may profitably do study-type reading. (Geeslin, 1972)

Instructional level - the level at which the pupil experiences some difficulty, perhaps in vocabulary, word, recognition, word-analysis or comprehension skills. Accuracy should be 95 percent and comprehension should be at least 75 percent. Smith (1963) describes the instructional level as "an approximate pronunciation score of 80 percent to 85 percent in the primary grades; and a score of 85 to 90 percent in answering questions both in primary grades and in middle grades" (p. 249). The developmental reading program in the classroom should be geared to the instructional level of pupils.

Frustration level - the level at which a child's reading skills break down, errors are numerous and comprehension is sketchy. Accuracy rate is 90 percent or less and comprehension is 50 percent or less. Kaluger and Kolson

(1969) place the accuracy rate at 70 to 75 percent and the comprehension below 70-75 percent.

Capacity level - (Hearing level or Auding level) - this is the level at which a pupil is able to understand what is read to her/him given the ideal set of circumstances (intelligence, maturation, appropriate materials, good instruction, etc.). At most, comprehension is 75 percent. According to Kaluger and Kolson (1969) this level is referred to as the expectancy level.

Oral and Silent Reading

Constructing and informal reading inventory (IRI) to determine reading level consists of the following steps:

1. Select a book or series of books in which the child is expected to work.
2. Select from each book two representative, unfamiliar reading samples. Smith (1963, p. 250) suggests samplings from the beginning, the middle and the end of each book.
3. Make a word count of each selection (30 to 50 words for first or second grade, increasing in length up to 150 to 300 words for senior high school).
4. Prepare comprehension questions (who, what, where, why, vocabulary and meaning) for each reading sample.

5. Select one reading sample for the pupil to read orally. The teacher records the errors and observes reading behaviour (word-by-word reading, repetitions, omissions, insertions, mispronunciations, etc.)
6. Check comprehension.
7. Give the pupil another reading sample to read silently. Tell the pupil any word she/he does not know. Observe the reading behaviour (whispering, rereading, etc.) and take note of the time required.
8. Check comprehension. Betts (1946) and Geeslin (1972) suggest that silent reading be checked by asking the pupil to recall what can be remembered. This method is probably a better test of comprehension, since the pupil is not assisted by the wording of questions.
9. Move upwards with the reading samples until the error rate is 10 percent or more (frustration level) and downwards to the 5 percent error rate (instructional level) and the 1 percent error rate (independent level).

The IRI may be made more extensive by the addition of vocabulary or word recognition tests and a phonics checklist.

Vocabulary test

1. Prepare a list of at least 20 words for each reader, using the list of new vocabulary printed at the back of each reader. If 200 new words are introduced in that reader, select every tenth word to make a vocabulary test of 20 words.
2. Select words which are representative of the word identification skills which are to be taught at that level.
3. Use the 1 percent, 5 percent and 10 percent error rates to establish the independent, instructional and frustration levels.
4. The vocabulary test may provide the approximate starting level for oral reading.

Sight Word test

1. Give the pupil a copy of the Dolch Basic Sight Word Test (220 words).
2. Ask the pupil to read all the words she/he knows.
3. If the child knows one-third of the words, she/he is reading at the end of the first reader level; two-thirds indicate the end of the second reader; and all the words at the third reader level (Kaluger and Kolson, 1969).

Phonics Checklist

1. Arrange the letters of the alphabet in random order on a dittoed sheet.
2. Ask the pupil to give the letter name and the letter sound.
3. Include phonic combinations such as sh, th, wh, ch, oa, ay, oi, ay, ai, aw, ee, ea, etc.
4. Include nonsense words such as sab, chay, feen, noik, laip, etc, to test the pupil's application of phonic skills.

Such a comprehensive informal reading inventory provides information relevant to appropriate placement and diagnostic information of value for instructional purposes. Observations noted and recorded errors indicate the skill weaknesses and strengths, and as McCracken (1972) suggests, are more accurate than formal standardized samples. He cautions however, that "informal reading inventories require that a teacher know children and know how to teach reading and language" (p. 277).

Research into reading achievement (Bond and Dykstra, 1967; Karlin, 1967; and Harris, 1969) does not endorse any one specific approach as being categorically superior for all pupils, but it does emphasize that teachers have a greater influence on reading achievement than either methods or materials. The teacher is then free to select the instructional approach best suited to his/her classroom. Teacher resource books and guides provide ample direction and activities for pre-reading preparation, for the directed reading itself and for the application of skills. Reading must be taught. It is insufficient to consider teaching reading as the mere assignment of pages to be read and questions to be answered. Unfortunately, this is the situation in too many classrooms, particularly in the middle and intermediate grades. As a consequence, comprehension suffers because students don't understand the words, they are unable to pronounce them and do not grasp their meaning. Prior to beginning a reading lesson, difficult words should be taught with an emphasis on pronunciation and meaning, especially multiple meanings.

It is important that teachers take the time to develop sound strategies for teaching reading, to refer to manuals and resource books for creative teachers may then add features to suit their style of teaching. It takes time to prepare a good reading lesson but it is only through lessons of good quality that reading will improve. It is more worthwhile to provide effective instruction at the onset, than to have to prepare elaborate, corrective or remedial activities for anticipated problems. "The preparation a student receives prior to reading an assigned selection is as important to his reading growth as the help he receives after reading." (Otto, McMenemy, Smith, 1973; p. 150)

The remedial reader, who reads significantly below capacity, requires an instructional approach other than the one found to be inappropriate in the regular class, because her/his learning style differs. Because remedial readers generally have deficits in the visual and/or auditory channels and thus cannot make the association between visual and auditory information, a multisensory approach, combining visual, auditory, tactile and kinesthetic feedback, is the one most frequently used. In matching reading approach with the needs of each child, the teacher must be knowledgeable of a wide variety of remedial strategies. Prior to the implementation of any approach, however, a diagnostic assessment of how the child learns and an analysis of the tasks to be presented is essential. The teacher must then establish specific long and short-term objectives to give purpose and direction to the remedial program. Because most children involved in a remedial program are already lagging behind their peers, it is important that time is not wasted on things the child already knows. Instructional time must be devoted to mastering (overlearning) those skills the child has not yet acquired.

Remedial reading approaches

Orton-Gillingham approach. The Orton-Gillingham approach is based on Orton's (1966) theory that severe reading disability, reading problems such as confusions, reversals, sequencing problems, mirror-images, etc. are due to "wiring-up" problems within the left and right brain hemisphere. The program was designed to wire-up the hemispheres through using all sensory channels simultaneously to build asociations between the visual, auditory, tactile and kinesthetic aspects of small phonic units. "These associations are called linkages for convenience. We strengthen recall of the weak by linking it with the strong, the known with the unknown." (Wolff, 1970, p. 85). The multisensory approach employs "the constant use of association of all the following: how a letter or word looks, how it sounds, how the speech organ or the hand in writing feels when producing it" (Orton, 1966, p. 138). Three phonetic associations are required:

Association I

1. The teacher shows the letter symbol and gives the letter name. The child repeats the letter name.
2. The teacher shows the letter symbol and gives the associated sound. The child repeats the letter sound.

3. Teacher shows the letter symbol and asks, "What does this letter say?" The child gives the sound. This association (the visual, auditory and kinesthetic linkage) is basic to oral reading.

Association II

1. The teacher makes the sound represented by the letter and says "Tell me the name of the letter that has this sound." This association (auditory to kinesthetic) represents the basis for oral spelling.

Association III

1. Teacher makes the letter. The pupil traces the letter. The pupil copies the letter, then writes the letter from memory with eyes closed. At this point the teacher then says "Write the letter that has this sound." This association (auditory, kinesthetic, visual) is the basis of written spelling.

Blending - Blending begins when the pupil has established all the linkages (names, sounds and how to write them) of the first group of letters, (a, b, f, h, i, j, k, m, p, t). Word cards, made from the first ten letters are included in the "case".

Spelling - After blending is started, the teacher introduces the concept of spelling, by pronouncing the word very slowly, by separating the sounds and by having the pupil repeat the sound, name the letter, place the letter card on the table in the correct position, then write it. There are four responses to the dictated word:

1. The pupil repeats the word.
2. The pupil names the letters.
3. The pupil writes the word, naming each letter as it is written.
4. The pupil reads back what has been written.

Fernald approach. The Fernald method is another multisensory approach which incorporates learning words as total patterns. The approach consists of four stages, which blend one into the other as the pupil improves. To begin instruction the teacher elicits from the pupil the word(s) she/he wants to learn. Words are taught one by one (Harris, 1961).

Stage I - Tracing

1. The teacher writes the word in large cursive writing (manuscript printing will do) on a strip of paper about 10cm by 25cm.
2. The pupil traces the word, keeping the index finger in contact with the paper. The pupil says each word as she/he traces it, starting to say the word at the time

the writing or printing starts and finishing both at the same time. This step is repeated until the pupil knows the word.

3. The pupil writes the word from memory. If correct, the pupil makes a card to file in an alphabetical file box. If incorrect, the pupil repeats steps 1, 2 and 3.
4. When the pupil has acquired several words, s/he is encouraged to compose a story using those words. The teacher writes the story, teaching any new words introduced.
5. The story is then typed for the pupil, who reads the typed story the following day.

Stage II - Writing without tracing

1. The teacher writes the word on an index card and pronounces it.
2. The pupil looks at the word, says it to her/himself or out loud, several times.
3. The pupil shuts her/his eyes and tries to make a mental picture of the word.
4. The pupil writes the word from memory. The word is filed in the alphabetical file box, when correct.

Stage III - Recognition in print.

1. The pupil looks at the printed word and is told what it is.
2. The pupil pronounces the word once, twice or several times.
3. The pupil writes the word from memory and files it away.

Stage IV - Word analysis.

1. The pupil begins to identify new words by noting their resemblance to words already learned.
2. Unfamiliar words may be learned through the stage III procedure or the pupil may be able to recognize the word parts. Phonic sounding is never allowed, as the total word is learned as a unit.

Until the pupil reaches stage III, reading materials are those which the pupil has created. By the time the pupil has reached stage III, other material is provided to read and new words are learned through the same procedures.

Linguistic approach. The linguistic approach, though sometimes confused with the phonic approach, differs in that words are learned as patterns. Reading is introduced by carefully selecting words which conform to a consistent spelling pattern so that the pupil can generalize the speech sounds represented by certain letters. Letters and sounds are not presented in isolation to be blended, but within a series of words which contain the same spelling pattern, (man, fan, pan, can, tan, Dan, Nan, etc)(Lerner, 1976; p. 240-241). The linguistic approach is based upon the following premises:

1. There is a high degree of regularity in the spelling patterns of English words.
2. Knowledge of the major spelling patterns can be applied to reading of innumerable other words.
3. Minimum contrast in words will lead pupils to develop the habit of paying close attention to the words being read and will develop a high degree of proficiency in word recognition.
4. Writing should utilize and reinforce word patterns as they are taught.
5. A limited number of high frequency words (sight words) must be taught.
6. Pictures should be excluded because they provide clues which encourage guessing rather than decoding (Otto, McMenemy & Smith, 1973). Although procedures may vary, they generally include the following steps:
    1) The teacher writes the word, pronounces it and spells it, pointing to the individual letters (man, m-a-n).
    2) The pupil looks at the word, spells it and pronounces it.

3) Words of the same spelling pattern are introduced (man, can, tan, Dan, fan, pan, Nan, ran).

4) Words of the same pattern are strung together to make sentences. Dan ran.

Fan Dan, Nan.

Nan can fan Dan.

5) Word which do not conform to the regular spelling pattern but which are necessary to form sentences are taught as sight words (the, is, a, etc.).

6) When one spelling pattern is mastered, a similar spelling pattern is introduced until all the basic spelling patterns have been learned.

Linguistic readers generally eliminate pictures, or in the case of the SRA Basic Reading Series, have pictures which bear no relevance to the test. The best known and currently available linguistic readers include the Merill Linguistic Readers, The SRA Basic Reading Series and the Miami Linguistic Readers. Let's Read (Bloomfield, 1963) is available in nine paperbacks or in a large hardcover edition, which appeals to older pupils because of its size. The linguistic approach is one which is very effective with children who have difficulty with the blending process.

Programmed reading. Two currently available programmed reading series, the Sullivan Reading Program (Behavioral Research Laboratories) and Programmed Reading (McGraw-Hill) are designed to teach the sound-letter relationship through word patterns. The program, in each case, is designed in small, discrete, sequential steps, which provide ample practice for a segment to be learned. Because the material is highly organized, it is applicable to the pupil who requires an individual program of instruction. It is recommended for children who have trouble with a synthetic phonics approach or who have particular problems with the pronunciation of short vowel sounds. Simple illustrations give a key to the pronunciation and identification of words. The materials include a placement test, which indicates the level at which the child should begin, workbooks and correlated readers. Programmed Reading (McGraw-Hill) has parallel readers at each level, so that one reader can be used in the classroom while the parallel reader, which would provide application of the same skills, is used in the remedial situation.

Organic Reading. Organic reading is the term Ashton-Warner (1963) uses to describe her method of teaching the Maori children to read. It was organic in that the words came from the child - were part of the child's own being. The method, as described in Teacher (Ashton-Warner, 1963) is summarized in the following steps:

1. Elicit key word from the pupil (one-look words because one look should be all that is required for the pupil to remember it).
2. Teacher writes the word on large tough cards. The pupil watches as the teacher writes (or prints) the word, and the pupil says the word as it is written or printed. The teacher puts the pupil's name in the corner of the card to identify the owner.
3. The student takes the word card to the mat and traces it with the index finger.
4. The self-chosen word is then placed in a box where all words are stored.
5. Each morning the teacher turns out these on the mat and each pupil selects her/his own words.
6. The pupil reads her/his own words to the teacher and/or to each other in the group. Words that are known are kept in the child's own word box and words not remembered are discarded, because they are not "one-look" words as they have not been sufficiently meaningful to be remembered.
7. Creative-writing begins with a one or two word caption, and then the upuil attempts to write a sentence or story-length caption. As vocabulary increases the pupil writes

two, three or more sentences of what is on her/his mind. General vocabulary springs up during story-writing.

8. Enter the words at the back of each pupil's book in good printing or handwriting which will serve as a model and reference for the pupil.
9. Children read the stories to each other and read each other's stories, asking the 'author' for any word that is not known.
10. Each pupil's stories become her/his own reading book.

Experience Approach (A)

This approach was developed by Stauffer (1965), who found that an eight-year old non-reader of above average intelligence responded to the experience approach (pedagogically) and kinesthetic-tactile technique (psychologically). The author listed it's components as follows:

1. Elicit the word the pupil wants to learn.
2. Discuss the meaning of the word and have the pupil listen for the number of parts that are heard.
3. Teacher writes the word in large cursive writing on a paper 3" x 12" saying each part (syllable or sound) as it is written by the teacher.
4. Teacher demonstrates the tracing and saying technique.

5. The pupil traces the word and says the parts as they are traced until the word is learned.

6. The pupil writes the word from memory as she/he says the word parts. Two consecutive perfect reproductions with copying are considered the measure of having learned the word.

7. The pupil is encouraged to write something using the newly learned word. Other words required for the sentence are taught in the same manner.

8. The sentences are typed and then read by the child, silently first, then orally.

9. The typed stories are arranged in book form with a title and Table of Contents.

10. Words are filed alphabetically in a vocabulary "word-box" and are read at intervals in the original context, in other contexts and in isolation.

Experience Approach (B) - (variation)

Day 1. Pupil dictates a story. Teacher writes the story as it is dictated. Teacher re-reads the story. The pupil illustrates the story, which the teacher has numbered and dated.

Day 2. Pupil re-reads silently the previous day's story and underlines words that are not known. The pupil re-reads the story aloud; the teacher tells the child any word that is not known.

Day 3. The pupil is presented with a list of all words (except is, as, and, the, etc.) in the order in which they occur in the story. When the pupil does not know a word, she/he refers to and re-reads the story until the word is found in the context.

Day 4. The words of the story are arranged in random order and the pupil is asked to read them. If words are not known, the pupil refers back to the story.

Day 5. Words known on day 4 are put on word cards. Each word card is numbered to correspond to the number of the story in which it was used. This is to help the pupil refer to the appropriate context, if the word is forgotten. Words the pupil has mastered are filed alphabetically in the child's own word-file box. Words that are not mastered are discarded.

Frequently the teacher should re-check the words in the pupil's word-box and remove any that are forgotten.

The organic and experience approaches, as outlined, are sometimes the only means of motivating a child who has experienced repeated failure in learning to read. Reading becomes very meaningful to a child when her/his own story creations are translated into print.

Neurological Impress. The neurological impress method, devised by Heckelman (1969) is one of unison reading by student and teacher at a rapid pace. No preliminary preparation is given to the reading materials and no attempt is made to test comprehension. The object of the exercise is to cover as many pages as possible within the allotted time and thereby imprint accurate reading patterns in the neurological system involved in learning to read. The pupil is told the nature of the impress method.

1. Sentences are read in unison several times to establish a fluent normal reading pattern and speed for teacher and pupil.
2. Choose reading material appropriate for the child's age.
3. The student sits slightly in front of the teacher and both read together from the same book. The voice of the instructor is directed into the ear of the pupil at fairly close range.
4. Initially, the teacher accompanies the reading with a smooth continuous motion of the index finger under the words as they are read. Later, the pupil is asked to do this.
5. The finger must always be at the word being spoken.

6. The teacher may be louder and slightly faster than the pupil until the pupil is in a position to assume a leadership role.
7. At any time that the pupil falters or comes to an unfamiliar word, the teacher increases the volume and speed of his reading to give the pupil the support required. There are to be no pauses in an attempt to apply phonic word-attach skills.
8. Reading continues for as long as time permits and as long as the pupil doesn't experience fatigue. Heckelman (1969) recommended fifteen minutes a day.
9. No comprehension check is made but the pupil may wish to volunteer information about what has been read.
10. The teacher comments positively on the fluency the pupil is developing.

The theory behind the neurological impress method is that the auditory feedback from the reader's own voice as well as that from the teacher reading the same material reinforces the learning process. Heckelman's research (1969) and that of Langford, Slade and Barnett (1974) indicated that severely disabled readers improved from implementing the neurological impress method for a series of sessions totalling from seven to twelve hours.

Glass-Analysis for Decoding Only. The Glass Analysis technique is a method of teaching children to form "perceptual conditioning (both audile and visile) for specific target letter clusters and for other structural parts of the whole word" (Glass & Glass, 1976, p. 3). It is not a reading method, but rather an approach to teaching students to form the correct auditory and visual responses to structures or components within a word, and to develop that response to the automatic level. It is based on the rationale that disabled readers have difficulty identifying words because 1) they can't remember them at sight, 2) they have not learned a procedure for attacking unfamiliar words, and 3) they are unable to apply phonic or structural analysis because they cannot remember the rules. The Glass Analysis technique uses whole words to teach 119 letter clusters. Five steps are basic to the decoding strategy:

"1. Identify the whole word and ask for the word to be repeated.
2. Give the sound(s) and ask for the letter(s).
3. Give the letter(s) and ask for the sound.
4. Take away letters and ask for the remaining sound.
5. Ask for the whole word." (Glass, Teacher's Guide, 1976; p. 11)

Teaching the "at" cluster in the word 'flat' would follow the following procedure. Teacher says:-

1. The word is flat. (Teacher shows card with the printed word.) What is the word?
2. In the word flat, what letters make the sound /fl/? What letters make the sound /at/?
3. In the word flat, what sound do the letters f-l make? What sound do the letters a-t make?
4. If I took off the /fl/ what sound would be left? If I took off the /at/ what would be left?
5. What is the whole word?

Words in the "at" cluster, for example, might proceed from such easy words as fat, to flatten, to battery, to smattering. The basic rule is that clusters, such as blends, (bl, fl, pr, st, etc.), digraphs (wh, th, sh, ch) and vowel combinations (oa, ing, ate, ou) must never be separated. Although sentences in the 'Follow Through Practice Books' (Glass, 1976) have been constructed to provide decoding practice in learned clusters, their purpose is not actual reading for meaning, but to provide practice from sentences which contain a high frequency of words in a specific cluster. Glass recommends at least two fifteen minute sessions daily for children with a history of difficulty. (Glass, 1976)

Hay-Wingo "Reading with Phonics". The approach to teaching reading through phonics, presented by Hay and Wingo (1948) differs from most synthetic phonics approaches in the attention given initially to auditory discrimination (listening for sounds), visual discrimination (looking for symbols) and the blending process, which is based on the principle that the initial consonant and the vowel are inseparable. The details of their research convinced the authors that a thorough knowledge of phonics would provide the "tool with which pupils may recognize instantly nearly all of our English words" (p. 11). Hay and Wingo summarize their research in the following statement:

> "A child will have independent command of 62 percent of our phonetic syllables when he recognizes short vowel blends. He will have an infallible key to unlock another 20 percent of our phonetic syllables when he understands blends with vowels made long by final "e" and long vowel equivalents. An understanding of vowels modified by "r" will contribute another 10 percent to the child's reading ability." (p. 13)

A blend is defined by the authors as the natural combination of the initial consonant sound and its following vowel - fe, sa, chi, sho are examples of blends. The technique consists of the following:

1. Only one element is introduced during a time allotment. That element is combined with previously learned elements.

2. Two basic methods are utilized in learning each element - listening for sounds and looking for symbols. Sight and sound are being matched constantly. Games, as well as seatwork and blackboard exercises, are used to develop these discriminations.

3. Sounds are used, not names. Phonetic analysis is made through sounds, not names.

4. Blending is taught by emphasizing the union of the consonant and the vowel. "The natural break comes after the vowel." (p. 43). A game called leapfrog is presented as a procedure to introduce the blending process. When the consonant "s" and the five short vowel sounds have been taught, the letter "s", with each of the letters a, e, i, o, u, is printed on the chalkboard. (˘ short vowel diacritical mark)

"Who can leap from /s/ to /ă/? (sa)
"Who can leap from /s/ to /ĕ/? (se)
"Who can leap from /s/ to /ĭ/? (si) etc."

The game is repeated until the children can make the union of consonant and vowel in one breath.

5. When an initial consonant and vowel can be blended in one breath, children are then able to add a final consonant (sa-t, se-t, si-t, so-b, su-n). Accompanying exercises provide practice in word reading.
6. When the blending process is well established, exercises involving sentence reading are introduced.
7. When all the consonant sounds and the short vowel sounds have been taught, the teacher begins cursive writing. Initially, the teacher composes the story in order to limit the vocabulary to words the children can pronounce and read.
8. Unphonetic words, necessary to creative writing, are listed on the chalkboard - about five new words per week. Children are required to pronounce and write each word every day. As new words are required, they are added to the list, and words which the children can read *and* write (or print) correctly from memory are eliminated.

The Hay-Wingo approach to teaching phonics is particularly suited to children who have problems blending, or who have a tendency to add "uh" to the consonant sound so that *cat* becomes *cuh-a-tuh*. The Hay-Wingo approach overcomes this hurdle by presenting c-a as the unit ca, so *cat* is sounded as ca-t.

Other approaches used for disabled readers include the Bannatyne's (1966) Color Phonics System and Gattegno's and Hinman's (1966) Words in Color. Both systems use colour to represent elements possessing the same speech sound. Color Phonics consists of tiny letter cards or plaques of appropriate colours to help the child identify the sound. The letter cards can be arranged and rearranged to form words. For Words in Color, Gattegno has prepared wall charts, using colour to indicate the speech sound represented by a letter or combination of letters; for example the 'a' as in take, 'ay' as in day and 'ai' as in rain, would be represented in the same column by the same colour because the speech sound is the same. Bannatyne and Gattegno, and Hinman have attempted to systematize the irregular orthography of the English language by using colour coding to identify the sound, regardless of the letter combinations which are used to represent that sound.

The Initial Teaching Alphabet, designed as a "simple systematic notation to be used in beginning reading materials and continued until the child or adult has acquired fluency and confidence in the medium", has been found to be effective in the early stages of the learning to read process (Mazurkiewicz, 1966). The Direct Instruction System of Teaching Arithmetic and Reading (DISTAR) has produced findings to support its effectiveness, especially with disadvantaged learners (Becker & Engelmann, 1977).

Implementation of either program requires specialized materials and methodology which are outlined by the publishers (i/t /a/ Publications and Science Research Associates). DISTAR also provides in-service training workshops for teachers interested in using the program.

As previously mentioned, teacher preparation is extremely important to the child's advancement in reading. Kaluger and Kolson (1969) suggest that teachers should ask themselves the following questions:

1. What exactly do I want to teach? What specific words are to be introduced? What sound is to be taught? What prefix are we trying to learn?
2. Why do I want to teach this particular subject matter?
3. What are the techniques, activities and materials by which this content can best be taught?
4. What is the most efficient and effective approach for teaching this material to these children at this time and in this environment?
5. How am I going to teach this?

Following this self-examination, the teacher may then begin directed reading activity, through 6 stages:

1. motivation - creating interest through background information, films, pictures, etc.,

2. preparation - developing new concepts, teaching new vocabulary in terms of both pronunciation and meaning,
3. presentation - guiding the silent and/or oral reading of the story,
4. development - providing opportunities to practise the newly acquired skill or to use the newly learned material,
5. follow-up and application - applying what has been learned to new situations,
6. evaluation - checking to determine if the objective of the lesson has been accomplished.

Since reading is critical to learning in most other areas, it is essential that sufficient time and thought be devoted to the preparation of reading lessons.

The remedial reading lesson, for those with more serious problems, must be both interesting and fast-paced, in order to motivate and sustain the attention of children who have come to expect failure. Prior to beginning remedial instruction, it is necessary to analyse the reading difficulty, using various diagnostic procedures, such as diagnostic tests, an informal reading inventory, task-analysis or check-lists. On the basis of this analysis, a plan of remediation must be outlined which is responsive to the individual child's learning style, which specifies difficulties and when and how each should be remediated, and which indicates instructional materials to be utilized.

There follows an outline of a remedial lesson which integrates writing, spelling and reading skills, and which is designed to motivate the child by offering a variety of activities, each geared to his/her level of competence.

Outline of a remedial reading lesson (25 to 30 minute period)

1. Introductory period (3 to 5 minutes)
   a) Motor, visual, directional, auditory, language training as it applies to reading, writing or printing and spelling.

      Motor - tracing, colouring, cutting, modelling, etc. to develop coordination and spatial accuracy to print or write on and within lines.

      Directional - left-right, up-down, above-below, in front of-behind, first-last-middle, etc.

      Auditory - listening for sounds, repeating rhythms, rhymes; counting words in a sentence, counting syllables in a word; learning differences in sounds (b,p; sh-ch; etc.); blending sounds, games such as "I spy" a pro-jector, a br-u-sh, a d-e-sk, etc.

Visual - matching likenesses and observing differences in pictures; matching lower case with upper case letters; finding words that start with "s"; arranging visual sequences, e.g. coloured blocks, coloured squares, triangles and circles; arranging letters to make words and words to make sentences.

Language - classifying objects according to size, use, colour, etc., brainstorming to increase vocabulary, following directions (e.g. Put the green book on the right side of the top shelf of the bookcase behind the door.)

b) Review of previous lesson - a few minutes review is necessary to ensure that the previous lesson has been learned before proceeding to the presentation of the next one. If the lesson has not been mastered, the teacher must have materials at hand to reteach that lesson.

2. Presentation of new lesson (5 to 8 minutes)

Provide a variety of examples, which are representative of the skill to be taught. Provide only those examples which are consistent with what you are teaching. Never introduce conflicting information or exceptions until the basic concept has been mastered. Provide opportunities for tracing and verbalising so that the concept will be integrated motorically, auditorily and visually as well as cognitively.

3. Application of lesson (5 to 8 minutes)

Children may work at chalkboard. Games, such as Bingo may be constructed to reinforce the lesson just taught. Letter cards or word cards may be used to respond to the teacher's dictation or directions.

4. Seatwork application (5 to 8 minutes)

Children should be expected to do some written work as an application of the lesson. This may take the form of a short spelling exercise, incorporating the principle being taught, copying or writing a list of words, or even writing a story using the newly learned material. Quick phonic or word drills may be part of this lesson step.

5. Oral reading

At least 5 minutes or more should be reserved for oral reading at the end of each lesson. With primary children the oral reading step may be limited to reading sentence strips and putting them in sequence. Reading material must be geared to the child's interest and ability level. The neurological impress technique is effective with older pupils, who enjoy the Morgan Bay Mysteries (Rambeau et al) or the Checkered Flag Series, etc.

Throughout the remedial instructional period, the teacher must provide positive reinforcement. All efforts, however small, must be recognized.

This type of remedial lesson requires that the teacher be extremely well organized. The teacher must know the organization and hierarchy of reading skills, and have the materials required to teach these readily available. Teaching remedial reading is not an easy task and must be reserved for persons who have demonstrated an ability to teach reading to children of all ages, and of all levels of difficulty, who have the creativity to adapt instructional procedures and materials to the needs of the child, and who are committed to the one objective of developing the full potential of each child's reading ability.

Suggestions for remedial activities:

I - Readiness activities.

Visual-motor activities - tracing, colouring, painting, outlining.

a) Activity books with dot-to-dot designs.
b) Pegboard designs, stringing in sequence coloured beads or shells of different shapes.
c) Sorting objects according to size, colour, function, form.

d) Constructing pictures or objects - cut and paste.

Visual discrimination and memory.

a) Noticing likenesses and differences. Many children's activity books have excellent pictures which are ideally arranged to develop visual discrimination ability.

b) Jig-saw puzzles.

c) Pictures to identify what is missing, what does not belong or what is wrong in the picture.

d) Playing cards provide visual discrimination possibilities: for gross discrimination, separating the diamonds from the clubs, for finer discrimination, the spades from the clubs or the spade face cards from the club face cards.

e) Card games such as animal rummy, authors, old maid and snap provide further discrimination activities.

f) The ability to match similar pictures or shapes is basic to the ability to match letters and words.

g) Examining pictures to interpret what is happening, to note details and to predict what is going to happen forms a basis for reading comprehension.

h) Examining pictures for a limit of 5 or 10 seconds to try to recall as many things as possible is a means of developing visual memory.

Auditory discrimination and memory.

a) Listen to identify sounds - the clock ticking, a bell ringing, a bird singing, a horn tooting, etc.

b) Listen to identify sounds as far or near, loud or soft, high or low.

c) Listen to identify sounds as the same or different - the same notes on the piano, different notes on the piano, the same tune sung twice, different tunes, etc.

d) Listen to identify words that are the same, different.

e) Listen to identify words that start the same, that end the same.

f) Listen for the sound at the first of a word, at the end of a word.

g) Represent a rhythm by hand claps.

h) Listen to follow a series of instructions.

i) Listen to remember a phrase in "Pass it on".

j) Listen to remember a list of items in the game Grandmother's Trunk or I went to camp and I took...

k) Listen to tell a story or to finish a story.

l) Auditory analysis training (Rosner, 1974; p. 379-381).

Level A - given a set of claps ranging from one to four, reproduce the clapping pattern.

Level B - given a spoken phrase, write the phrase using a horizontal dash drawn from left to right to represent each word in the phrase

Level C - given a series of spoken words followed by the same series from which one word has been deleted, state the deleted word, i.e. 1) "I see you", 2) "I see". Which word did we forget that time?

Level D - given a spoken two syllable compound word, restate the word omitting a designated syllable. (Say tomboy. Now say it again but don't say boy.)

Level E - given a spoken three-syllable word, restate the word omitting a designated syllable. (Say carpenter. Now say it again but don't say car.)

Level F - given a spoken word, repeat the word omitting its initial consonant sound. (Say bat. Now say it again but don't say b.)

m) Listen to memorize telephone numbers, address, postal code, emergency numbers.

n) Learn to memorize songs and verses (rhymes).

Prereading skills.

a) Teach the names of the letters (Chall, 1967; p. 149).

b) Teach children to recognize labels, names, signs, (e.g. door, table, A & W; I.G.A.; C.B.C.; Dominion, the Bay, Eaton's, McDonald's, etc.; stop, yield, danger, walk, don't walk).

c) Teach the child to print her/his own name correctly from left to right with letters in the correct orientation and sequence.

II - Phonics instruction

Winkley (1970) and Durkin (1974) have been very critical of the ineffective teaching of phonics. From their point of view, phonics instruction has failed because it has not been sufficiently intensive. Lacking practice, the child does not establish letter-sound relationships at the automatic level. Winkley (1970, p. 616) suggests ten steps which would ensure mastery learning, at which point the child, given the letter sound would be able to identify the symbol; given the letter sound, the child would be able to name the symbol; given the letter sound, the child would be able to write the symbol; given the letter name, the child would be able to give the sound; given the letter symbol, the child would be able to give the letter name, the sound and write the symbol.
In addition to lack of practice, Durkin discusses inappropriate practice, such as filling out workbook pages.

In her opinion, phonics is too often taught as an isolated skill rather than related to the objective for which it was intended, namely to identify unfamiliar words. Moreover, the usefulness of phonics as a tool to becoming an independent reader is neither explained nor applied, Durkin (1974) states that, "Teachers and publishers of instructional materials must provide children with many opportunities to apply what they are being taught to words they cannot read." (p. 154) She furthermore suggests that phonics is taught "To help children learn how to use visual clues to figure out on their own the identity of words not recognized in their written form" (p. 155). Phonics instruction must therefore be intensive; it must be applied to show the child to identify its usefulness in identifying new words.

Activities to Improve Sound-Symbol Association

a) Have the child cut out from a magazine pictures of objects that start with the specific sound just learned. (e.g. /m/) Paste the pictures in a scrapbook on the page with the appropriate letter symbol. (the letter M printed at the top)

b) Give the child a full page advertisement from a newspaper and direct the child to circle, then trace all the letters that make the sound /m/.

c) Using a similar approach, have the child write all the words that start with /m/ or that end with /m/.

d) Alphabet rummy may be played with letter cards.

e) Using a list of words from a word bank, find all the words which begin with a specific consonant, or words which have a specific vowel sound.

f) Sort word cards into three categories - words with short vowel sounds, words with long vowel sounds, and other words.

g) Find pairs of words that rhyme.

h) Find words that start with or end with a specific digraph.

i) Games such as Bingo, Four-of-a-kind, Fish or Snakes and Ladders may be constructed to provide for early mastery of letter-sound relationships.

j) Boxes of letter cards for each child provide manipulative materials for the child to discover new words. As each word is constructed, the child can print that word in her/his workbook.

k) Phonic generalizations must be carefully stated to be meaningful to a child. Many children, for example, can rhyme the statement "When two vowels go walking, the first one does the talking" but are unable to tell you what it means or how it is applied. Would it not be better stated "When two vowels are side by side, the first one is usually long and the second one is silent"?

l) Scrabble, Junior Scrabble, Anagrams or Crossword puzzles can be utilized as effective practice items for phonic skills.

III - Word recognition

Recognizing words in print depends on one's knowledge of the variety of ways of identifying words, and the ability to apply that knowledge as the need arises. These include recognizing words at sight, using phonic or structural analysis, syllabication, picture, configuration and context clues. The necessity for useful and practical application of phonics instruction has already been discussed.

1) Sight Words

Sight words according to Hood (1977) is the term applied to three separate, although often overlapping, groups of words. The term is often used to refer to those irregular words (the, their, who, etc.) which do not conform to a regular spelling pattern and which cannot be figured out phonetically. Secondly, the term refers to that list of words which a child can recognize on sight, whether they conform to a regular spelling pattern or not. Hood refers to these as "instant words". Thirdly, the term is used to designate that core of high frequency words which one uses both in reading and writing. This core vocabulary is that which comprises the Dolch list of 220 Basic Sight Words. The usefulness of the Dolch list has been examined and re-examined and yet is still found to be as useful to-day as it was when originally compiled (Johnson, 1971; Lowe and Follman, 1974; Mangieri and Kahn, 1977). Because of the abstract nature of most of the sight (Dolch) words, and because of their similarity in composition and configuration (i.e. their, there, where, when), children frequently find these words difficult to learn and easily confused.

Activities

a) Teach sight words initially through the Fernald technique.

b) Provide daily practice through flash-card or other drills.

c) Group-word teaching game (Dolch) is a Bingo-type game with cards, caller's cards and chips, designed to provide the practice required to provide instant recognition.

d) Wordo - The teacher prepares pupil cards (approx. 15cm x 20cm) marked off in 25 squares, the centre square being marked "FREE". As the words in the sight vocabulary are learned each child makes her/his own word card (approx. 3cm x 4cm) with the word printed neatly on one side. To play the game, each child arranges her/his word cards (printed side up) in random order on the large squared pupil card. The teacher says a word; if the child has that word, she/he turns it over, leaving the blank side up. As the words are called, the pupils, if they have the called words, turn their cards over until they get five in a row, horizontally, diagonally or vertically. The first one to do so, calls "Wordo". At this point, the child has to read back the words on the cards, whose blank sides have indicated he has won "Wordo". This squared but blank card is extremely adaptable to a variety of drill-type activities in phonics or in math as well.

e) Timed drills. Using the child's word cards, the teacher can have the child read them to see how many can be read in one minute. The child may be interested in charting each day's score.

f) Duplicate or triplicate sets of word cards may be used to play adapted versions of Fish, Three or Four-of-a-kind or Concentration.

g) Letter-box words. The child paints or colours an ordinary brown envelope to look like a letter box. Another brown envelope is labelled 'Dead Letters'. Using the word cards that the child has made, the teacher checks frequently to see if the child knows them. Words that are known go in the letter-box. Words that are not known go in the "Dead Letters" box. These words have to be reviewed until the child knows them, at which time they are put into the letter-box.

h) Tachistoscopes may be made from envelope-type report card covers with a small slot, large enough to clearly expose a word. Word lists are printed on cards which will fit into the envelope-type cover. A shutter may be made to hide the word appearing in the slot or the card may be moved upward to hide the word. The child sees how many words can be read at the first glance. Difficult words are reviewed by the tracing technique.

i) Language master. The printed word and its spoken counterpart are placed on the language master card and tape. The child sees the word, says it, then checks the tape to see if the word was correct. If the cards are laminated, the child could be responsible for self-teaching by tracing the word on the card and saying it as it is traced.

j) Tape-recorder drill. The teacher, having recorded the instructions on the tape-recorder, gives the child a dittoed list of sight words. The instructions might be "I will say a number and a word. When I say the word, you circle it and put the number beside it. The number is one, the word is they. Circle they and put the numeral one beside it." etc.

k) Group activity. Prepare a dittoed exercise using sight words that are most frequently confused. Arrange the words in four or five columns across the page.

the	them	there	then
where	what	when	whose
who	how	now	own
went	were	want	was

The dittoed sheets are distributed to the group. Each child turns the sheet face down so the words cannot be seen. The teacher, using flash cards or the overhead projector, exposes one of the words in the first row for one or two seconds. Then the child turns over the paper and circles the word. This exercise, because it provides so many alternative responses may be used over and over again. All that is required is that the teacher keep the master copy, so that reprints may be made.

2) Structural analysis

Structural analysis refers to the procedure of looking at the units which form the structure of a word. It includes the teaching of inflectional endings, compound words, syllabication, roots, prefixes and suffixes. The specific content of structural analysis is identified in terms of grade level or textbook requirements. The ultimate purpose of structural analysis is rarely stated as it actually is - a means of identifying word parts for ease in pronunciation, reading, writing, or determining meaning. For the child who has reading difficulties, encumbering her/him with additional generalizations, and exceptions to the generalizations, only adds to the difficulty. The approach of looking at word parts or clusters, as Glass (1976) calls them, seems to be an easier and more profitable way of arriving at the pronunciation of a two, three or four syllable word. Syllabication rules according to Waugh and Howell (1975) are more useful to the typist who needs to know where a word must be hyphenated than they are to the reader who wants to know how to pronounce the word. For this reason, the authors suggest teaching generalizations which are of the highest utility. They reduce the generalizations to the following:

a) The vowel is the key pivot unit in a stressed language.

b) The number of syllables in a word is equal to the number of vowels that are heard in it.

Given these two basic statements and a knowledge of vowels and vowel combinations learned through phonics, children should have little difficulty dividing a long word into units for ease in pronunciation.

Since structural analysis has a meaning component, extensive practice with root words, prefixes and suffixes is required, but is best left for pupils at the upper grade levels. For the child with reading difficulties, for whom decoding is a major task, the teaching of the meaning structures must be kept to the simplest and most practically important units (plurals, suffixes and as er, ly, ing, est, full, less; and prefixes such as dis, re, pre, ex, sub).

Activities

a) Classify words according to the number of word parts.

b) Find words that can be combined to form compound words.

c) Given a list of words, underline in each the vowels that are heard.

d) Teacher pronounces words, as pupils clap to, or count the word parts.

e) Teacher pronounces a word, child writes the first two, the first three or the first four letters that are heard.

IV - Reversals

Of great concern to teachers and parents is the child's tendency to mirror-image (or reverse letters and words b-d, was-saw), to invert letters such as u-n, m-w, or even to rotate letters so that they lie on their side. Such signs are often viewed to an indication of perceptual distortion, dyslexia or neurological impairment. However, recent information (Cohn & Stricker, 1976; Bannatyne, 1972; Hardin and Bernstein, 1976) suggests that the tendency to confuse the orientation of letters, or to reverse words, is a normal characteristic in nearly all children up to about seven years of age. Reversals are so common among kindergartners and first grade children, that they are considered to be part of the normal difficulty experienced in learning to read.

From their research, Cohn and Stricker (1976) concluded that the problem was not one of sorting out the visual image, but rather of attaching the correct letter name to the appropriate orientation of the letter form. This is the type of problem an adult might have in identifying identical twins by name. Both Cohn and Stricker and Bannatyne suggest that children who show extreme difficulties with letter names and orientation are probably not maturationally ready to make these associations. In most cases, the reversals disappear by the end of second grade or early third grade. Although reversal tendencies seem to persist in reading disability cases, they are not confined to them alone, for even good readers frequently reverse words or phrases. Because this is such a persistent problem in the early grades, the following activities are suggested:

a) Tracing and printing or writing is necessary when teaching the letter form. The child should trace the letter, say it as it is traced, then write it from memory.

For children who are confused by visual appearance, covering their eyes and having them write the letter without seeing it is often a successful procedure.

b) Letters should be made in one continuous movement pattern. The ball and stick method of teaching printing is much too confusing for these children, for they don't know where to attach the stick.

c) Provide cues to help the child remember. For the letter b - the bat hits the ball. The letter "d" will be remembered if the child says the alphabet a-b-c-d and remembers that c comes before d, and c forms the beginning of the letter d.

d) Provide cue cards (with picture and letter) which may be taped to a child's desk for easy reference.

e) Pupils who have difficulty with letter orientation should never be seated so that they have to shift orientation when copying from the chalkboard or when using the classroom alphabet chart. These children should be seated so that they face directly the classroom alphabet as well as the chalkboard when they are working at their desks.

f) Teach cursive writing as soon as possible because the cursive forms (b,d,p,q) are significantly different for each other.

g) Emphasize the left-to-right direction by drawing a green line down the side of the child's book as well as down the side of the chalkboard to indicate the starting place.

h) On flash cards as well as in chalkboard work, print the first letter of each word in green to indicate the beginning.

i) Allow the child to use a finger, a pencil or a stylus as a guide in reading. Tracing with the stylus the first letter of reversible or confusing words will get the child started with the appropriate sound.

j) Use a marker (a file card with a slot cut in it large enough to expose a line of print a little at a time) and push the marker along the line from left to right.

k) Draw an arrow, pointing towards the right, under words or sentences.

l) Allow children to use a typewriter, which in its operation reinforces the left to right sequence of letters in words.

Perhaps the best remedial measure is to correct the error when it first occurs. Continued practice in printing a letter, a word or a name the wrong way eventually becomes so entrenched that it becomes more difficult to correct.

V - Reading Comprehension

In the primary and junior grades, if the teacher has prepared the lesson well, comprehension should not be a problem. The problem does sometimes arise in the junior grades, as well as in the intermediate and senior grades, where students are required to read for information. Sometimes, assignments such as "Read the next chapter and make notes for tomorrow" end up being pages and pages copied directly from the text, because the student does not know how to discriminate between important and unimportant material. When reading is assigned, the teacher must specify the purpose for reading. Provide relevant background information that will enable the student to determine what pieces of information are important within that specific context. For students with severe comprehension difficulties, new or different vocabulary should be taught, the purpose must be clearly explained and a bare outline, indicating by numbers only major headings and supporting facts or details, allows the student to determine what and how much information is to be derived from the reading assignment. Group or classroom discussions, prior to and following a reading assignment, provide significant increases in understanding and remembering what has been read. Kennedy (1971) suggests that teacher should consider the following questions:

1. "Why am I assigning this material? What are my purposes? What do I want my pupils to know or to be able to do as a result of having read this assignment?
2. What new vocabulary words or new concepts will the pupils encounter? How can I help them "meet" these terms and concepts?
3. What sort of questions can I write to guide them and to give purpose to their reading?" (p. 27)

At the higher grade levels, one of the greatest assets a teacher can provide to students is text book skills; a knowledge of how to use textbooks effectively and efficiently.

In the upper elementary, intermediate and senior grades, the textbook plays a significant role in school learning. For this reason, it is imperative that pupils receive specific instruction in textbook use. The main features of a textbook to be considered are 1) table of contents, 2) signalling devices, 3) textbook questions or summaries and 4) index.

Table of contents: The table of contents should be presented and discussed as it provides an overview of the contents of the book. Following a discussion of the table of contents, the pupils should have acquired a knowledge of what specific topics, skills and activities are covered and the order in which they are presented

Signalling devices: Signalling devices include chapter subtitles, headings, bold-faced type, topic sentences italics, illustrations, charts, maps, pictures, etc. If pupils understand that these devices are used by the author to call attention to the most important information, pupils, especially those with reading difficulties, will read more efficiently and with greater understanding. Pupils should be taught that by rephrasing a heading in the form of a question, the answers to that question are to be found in the reading material which follows. Similarly the topic sentence, which may be in bold-face type, indicates the subject matter included in the paragraph that follows. Pupils should be made aware that illustrations, charts, maps, pictures, etc. are included in textbooks to clarify the information presented.

Textbook questions or summaries: Many textbooks include a series of questions at the end of each chapter to provide a review of the content of the chapter. For students with reading difficulties, it is suggested that they be given the questions first in order to establish a purpose for reading. Most textbooks have a summarizing paragraph at the end of each chapter or a paragraph with the heading "Summary". Teachers can help their disabled readers by indicating the location and function of the summary.

Index: Pupils should be taught the function of the index and the difference between the table of contents and the index. Practice in using the index, similar to the practice given in the use of the dictionary, will enable a pupil to use the index for locating specific information quickly.

Frequently, the reading level of a textbook is significantly above the grade level for which it was intended. In such cases, the teacher should attempt to use a parallel text that will provide equivalent information at a lower reading level. Otherwise, there are three alternatives. First, the teacher may present as much information as possible in an oral lesson, supported by related visual material such as pictures, objects, slides, films, filmstrips or videotape. Secondly, a more senior pupil, a better reader, or a parent volunteer might read the book to the pupil and discuss it as it is being read. Finally, the book might be re-written to simplify reading vocabulary and structure.

Generally, comprehension difficulties can be minimized if reading lessons are well organized and prepared creatively.

Other materials

Students, who have for several years experienced reading difficulties eventually become "turned-off" of reading. It is difficult to appeal to this type of student through traditional reading material. By the age of 11 or 12, girls and boys have developed keen interests in the world around them. It is up to the teacher to employ these interests as a basis for making reading acceptable and enjoyable. The following list of materials may provide the key to motivate the most reluctant reader:

- Sports - Baseball, football or hockey cards.
  - Rule books for hockey or football
  - Athletic programmes.
  - Sports Illustrated.
  - Sports page from the daily newspaper.
  - Souvenier pamphlets or programmes.
  - Biographies of heroes or heroines in sport, theatre, movies, etc.
- Greeting cards.
- Joke books.
- Comic strips.
- Riddles.
- Bumper stickers.

Tongue twisters.

Popular songs.

Record jackets which offer biographical information about the artist.

Travel brochures.

Airplane, bus, train schedules.

Maps.

Classified ads (want ads, lost and found, articles for sale, employment wanted)

Commercial advertisements - cars, boats, clothing, holidaying, entertainment.

Advertising circulars or brochures for cars, motorcycles, bicycles, boats, snowmobiles, etc.

Repair manuals and parts catalogues for motorcycles, bicycles and snowmobiles.

Catalogues - Sears, Canadian Tire, Consumer's Distributing, etc.

Telephone book - yellow pages.

TV Guide.

Horoscope.

Ann Landers, Dear Abby (appropriate selected letters)

Cereal and food boxes.

Cook books, fashion books.

Patterns - how to read and interpret a dress pattern.

Recipes - how to read and interpret a recipe.

How-to manuals - to knit, to sew, to macramé, to ski, to fish, to baby sit, to run a marathon, etc.

Books for runners and joggers.

Guinness book of records.

Bonus coupons, lottery tickets, etc.

Science magazines.

Nature books - birds, animals, fish, flowers, etc.

Driver's manual.

First aid booklets.

Consumer information - how to be a good consumer (a packet can be obtained through the Department of Consumer and Corporate Affairs).

Banking information - how to start a bank account, how to make a deposit, a withdrawal, interest, etc. (available from a local bank).

"Learning from Newspapers" (1974) and "Learning from newspapers: reading" (1975) by Hugh Partlow are two publications which are available through your local newspaper or the Canadian Daily Newspaper & Publishers Association.

Newspaper headline stories.

Using TV to teach reading skills (see Reading Teacher, October, 1975, suggested pages 45-51 for activities, by Adams & Harrison.)

Dyslexia

Any discussion of reading and especially reading difficulties must also include some reference to the term dyslexia. The term dyslexia, originating from the word 'alexia' meaning the loss of ability to read due to brain injury, is currently applied to such a variety of mild to severe reading problems that the term itself is of little value. Following some definitions and interpretations of dyslexia, all would qualify as dyslexic in that everyone at some time mispronounces, omits, substitutes or transposes syllables or words, reads 'through' as 'though', 'single' as 'signal', 'felt' as 'left', 'once there was' rather than 'there was once'. The true dyslexic, however, has severe reading problems, reads word-by-word, is unable to recognize words, unable to synthesize sounds and syllables in the correct order, has extreme difficulty with words such as the, there, they, went, want, who, etc. and as a consequence has difficulty in comprehension of what she/he reads, but has good comprehension of what is read to her/him. The truly dyslexic child has even greater difficulty with spelling and written language than with reading. A word spelled by the dyslexic child may have little resemblance to the original word. Sentences may be difficult to understand because they lack essential elements such as subject and verb, and because of the order of words in the sentence. The following example of these two types of problems are based on one teacher's experience with reading disabled children.

Student A - boy, age 13, grade 6, W.I.S.C Verbal I.Q. - 110.

> "A frist trans were pulled by hores then they maKe a engen it was not to good. ~~On~~ one day gengenand a horen had a race h~~a~~ houres was ~~wing~~ wining"

Student B - boy, age 16, grade 10, W.I.S.C Verbal I.Q. - 110.

> "it is Modern game inbeteew football and baseball erquires great endworca girls playing area so smaller and at the big Western ~~tr~~ umoisties they 20,000 at a game...".

In view of the preceding discussion, it is recommended that the term dyslexia be reserved for students with more severe reading and spelling problems; students who meet specific criteria.

As with other learning difficulties, the causes of dyslexia may be due to actual brain injury, neurologic dysfunction or impairment, an inherited trait, or a developmental lag. Dr. MacDonald Critchley, a world renowned authority on Developmental Dyslexia, speaking at the Quebec Conference of the Association for Children with Learning Disabilities in March, 1979, suggested that developmental dyslexia, which he differentiated from dyslexia resulting from brain injury, was not due to intellectual inadequacy, to socio-economic opportunity, nor to any brain defect that could be determined by diagnostic procedures. He maintains that in most cases, there was a family history of reading problems. Dr. Critchley outlined the following characteristics:

1. overall slowness in reading, punctuated by hesitancies when unfamiliar or polysyllabic words are encountered.
2. confusion of left-right sequence (was-saw).
3. omission of short words - articles, prepositions, utility words.
4. pluralization of a singular noun or the omission of a suffix.
5. abbreviation of a longer word (adosent for adolescent).
6. mispronunciation - omitting syllables or sequencing syllables in the wrong order.
7. guesswork - the word read aloud usually shows the same beginning letter (officer for official, finger for fringe).
8. substitutes a synonym (curtains for drapes, beer for ale).
9. doesn't recognize errors.

10. unorthodox manner of reading - poor and irregular ocular movements, difficulty coping with length of line, size of print, moving to the next line.
11. written work marred by poor spelling.
12. requires much more than average time to read, to write or to do written assignments.

According to Dr. Critchley, the prognosis for these children is good, if five factors are met:

1. high intellectual ability.
2. the earlier the diagnosis the better.
3. sympathetic, enlightened and encouraging attitude on the part of the parent and teacher.
4. availability of intensive, individual instruction by a teacher, trained and experienced in the techniques of teaching dyslexics.
5. personality trait on the part of the student, a sheer determination to succeed; "ego strength"; "guts".

Dr. Critchley emphasized that the remedy is educational and that with good remedial teaching, they learn to cope satisfactorily in society. Because many of these dyslexic individuals are superior in other areas of functioning, they will show their aptitude, skill and creativity in other ways.

The teaching of reading is such a vast and complex topic that it is impossible to cover every facet of reading instruction. Many facets of reading instruction have not been covered here as the intent of this chapter is to provide the teacher with information which would be of practical value in determining a child's level of reading, level of difficulty and the means through which a remedial program may be implemented. Program suggestions have been confined to those which the teacher may implement without additional or costly material. Suggestions for remedial activities were also made with the same practical purpose in mind. Since, according to the research (Chall, 1967; Bond and Dykstra, 1967; Dale, 1969; Glock, 1972 and Cutts, 1975) the key factor in the success of any reading program is the teacher, it is incumbent upon teachers to accept the responsibility for a good reading program within the classroom. On the part of the teacher this requires:

1) a knowledge of the reading program which you think you can teach best,
2) a knowledge of the child and the child's needs in reading instruction.
3) a willingness and an ability to adapt instruction to the needs of the child,

4) self-preparation prior to the reading lesson; know what concepts are to be taught; what background information is necessary; what skills are to be reviewed or taught; set an objective for the reading lesson.

5) preparation of the child, group or class, for the reading lesson - teach the new vocabulary, provide the background information, teach new skills that are required.

6) present the reading lesson with interest and enthusiasm,

7) provide opportunities for discussion,

8) select application activities or exercises that are purposeful and which integrate other aspects of language, spelling and writing,

9) evaluate the reading lesson - what went well? what went wrong? what should be retaught? were lesson objectives met?

10) plan the next lesson on the basis of the previous evaluation.

Powell (1972) sums up the situation in the following quotation: "In every teaching situation there is a covenant, implicit though it may be, between the student and the teacher. The student comes expecting, however covertly, to give and receive. The teacher senses and accepts this responsibility and does likewise." (p. 607). To provide for and to respond to the child's needs, the teacher must heed the message of Johnson and Kress (1971) "The school program cannot be a straight jacket into which the child must fit. It cannot be a rigidly charted course which he must follow. Instead, it must have the flexibility necessary to allow him room for full development in each area of concern, even when he is developing along different lines from those of his peers." (p. 442)

REFERENCES

Adams, A. H. & Harrison, C. B. Using television to teach specific reading skills. The Reading Teacher, 1975, 29:1, 45-51.

Ashton-Warner, S. Teacher. New York: Bantam Books, 1965.

Bannatyne, A. The Color Phonics System. In Money, J. (ed.). The Disabled Reader. Baltimore: Johns Hopkins Press, 1966.

Bannatyne, A. Mirror-images and reversals. Academic Therapy, 1972, 8:1, 87-92.

Becker, W. & Engelmann, S. The Oregon Direct Instructional Model. University of Oregon Follow Through Project, Eugene, Oregon, May, 1977.

Betts, E. A. Foundations of reading instruction. New York: The American Book Company, 1946.

Betts, E. A. Reading: graphic signals. The Reading Teacher, 1971, 24:3, 230-231.

Bloomfield, L. & Barnhart, C. Let's Read. Bronxville, N.Y.: C. L. Barnhart Inc., 1963.

Bond, G. & Dykstra, R. Cooperative research program in first-grade reading instruction. Reading Research Quarterly, 1967, 11:4.

Chall, J. Learning to read: the great debate. New York: McGraw Hill, 1967.

Cohn, M. & Stricker, G. Inadequate perception vs. reversals, The Reading Teacher, 1976, 30:2, 162-167.

Coleman, J. Equality of educational opportunity. Review of Educational Research, Summer 1975.

Critchley, M. Dyslexia: an overview. Presented to the Quebec Conference of the Association for Children with Learning Disabilities, Montreal, 1979.

Crosby, R. M. & Liston, R. A. The Warpiders. New York: Delacarte Press, 1968.

Cutts, W. Does the teacher really matter? The Reading Teacher, 1975, 28:5, 449-452.

Dale, E. The future of reading. The Reading Teacher, 1969, 23:3, 205-216.

Dilling, H. J. & Capell, B. A. Relationship between readiness skills and reading achievement. Reporting Classroom Research, Ontario Educational Research Council, 1975.

Durkin, D. Phonics: instruction that needs to be improved. The Reading Teacher, 1974, 28:2, 152-156.

Gattegno, C. & Hinman, D. Words in Color. In Money, J. (ed.). The Disabled Reader. Johns Hopkins Press, 1966, 175-191.

Geeslin, R. The placement inventory alternative. The Reading Teacher, 1972, 25:4, 332-335.

Gilmore, J.V. Gilmore Oral Reading Test. Harcourt Brace and World Inc.

Glass, G. & Glass, E. Glass analysis for decoding only. Teacher's Guide. Garden City: Easier to Learn Inc., 1976.

Glass,G. & Glass, E. Follow Through Practice Books. Garden City: Easier to Learn, 1976.

Glock, M. D. Is there a Pygmalion in the classroom? The Reading Teacher, 1972, 25:5, 405-408.

Gray, W. & Robinson, H. Gray Oral Reading Test. Bobbs Merrill Co. Inc.

Hardin, B. & Bernstein, B. What about reversals. Teacher, 1976 (Oct).

Harris, A. J. How to increase reading ability. New York: David McKay Co. 1961.

Harris, A. J. The effective teacher of reading. The Reading Teacher, 1969, 23:3, 195-204.

Hay, J. & Wingo, C. Reading with phonics. Chicago: J. B. Lippincott, Co., 1948.

Heckelman, R. J. A neurological impress method of remedial reading instruction. Academic Therapy, 1969, 4:4, 277-282.

Hood, J. Sight words are not going out of style. The Reading Teacher, 1977, 30:4, 379-382.

Johnson, D. D. The Dolch list reexamined. The Reading Teacher, 1971, 24:5, 449-457.

Johnson, M. S. & Kress, R. A. Matching children and programs. The Reading Teacher, 1971, 24:5, 402, 442.

Kaluger, G. & Kolson, C. Reading and learning disabilities, Columbus: Charles E. Meurill, Co. 1969.

Karlin, R. Research results and classroom practices. The Reading Teacher, 1967, 21:3, 211-223.

Kennedy, L. D. Textbook usage in the intermediate-upper grades. The Reading Teacher, 1971, 24:8, 723-729.

Kerfoot, J. K. An instructional view of reading diagnosis. In Figurel (ed.) Reading and Inquiry. Proceedings of Annual Convention, International Reading Association, Newark: International Reading Association, 1965.

Langford, K., Slade, K. & Barnett, A. An examination of impress technique in remedial reading. Academic Therapy, 1974, 9:5, 309-319.

Lerner, J. Children with learning disabilities: theories, diagnosis, teaching strategies. 2nd, edition. Boston: Houghton-Mifflin Co., 1976.

Lowe, A. J. & Follman, J. Comparison of the Dolch list with other word lists. The Reading Teacher, 1974, 28:1, 41-44.

Mangieri, J. & Kahn, M. S. Is the Dolch List of 220 Basic Sight Words irrelevant? The Reading Teacher, 1977, 30:6, 649-651.

Mazurkiewicz, A. J. The initial teaching alphabet. In Money, J. (ed.) The Disabled Reader. Baltimore: Johns Hopkins Press, 1966.

McCracken, R. A. Informal reading inventories: diagnosis within teacher. The Reading Teacher, 1972, 26:3, 273-277.

Ontario Ministry of Education: Education in the Primary and Junior Divisions. Toronto: Government of Ontario, 1975(b).

Orton, J. L. The Orton-Gillingham Approach. In Money, J. (ed.) The Disabled Reader. Baltimore: Johns Hopkins Press, 1966.

Otto, W., McMenemy, R. & Smith, R. Corrective and remedial teaching. Boston: Houghton-Mifflin, Co., 1973.

Partlow, H. R. Learning from newspapers. Toronto: Canadian Daily Newspaper Publishers Association, 1974.

Partlow, H. R. Learning from newspapers: reading. Toronto: Canadian Daily Newspaper Publishers Association, 1975.

Powell, W. R. The effective reading teacher. The Reading Teacher, 1972, 25:7, 603-607.

Rosner, J. Auditory analysis training with prereaders. The Reading Teacher, 1974, 27:4, 379-384.

Schiffman, G. Program administration within a school system. In Money, J. (ed.) The Disabled Reader, Baltimore: Johns Hopkins Press, 1966.

Smith, N. B. Reading instruction for to-day's children. Engelwood Cliffs: Prentice-Hall Inc., 1963.

Spache, G. D. Diagnostic Reading Scales. New York: McGraw-Hill, 1963.

Stauffer, R. G. Certain basic concepts in remedial reading. In Barbe, W. (ed.) Teaching reading: selected materials. New York: Oxford University Press, 1965.

Waugh, R. P. & Howell, K. W. Teaching modern syllabication. The Reading Teacher, 1975, 29:1, 20-25.

Winkley, C. Why not an intensive-gradual phonics approach? The Reading Teacher, 1970, 23:7, 611-617, 620.

Wolff, A. G. The Gillingham-Stillman Programme. In Franklin & Naidoo (eds.) Assessment and Teaching of Dyslexic Children London: Invalid Children's Aid Association, 1970.

2. SPELLING

According to Johnson and Myklebust (1967) the majority of children with learning disabilities have deficits in spelling. The expression that good spellers are born, not made, is often heard, yet Furness (1965) maintains "most good spellers are made, not born. Spelling ability is acquired, not inherited." (p. 11) When one considers the processes that are involved in spelling or written language, the complexity is easier to understand. What is involved in spelling and why is it so complex?

In order to spell a word one must first perceive the word correctly, auditorily. That is, the sounds or phonemes must be identified, discriminated, and placed in accurate temporal order. Before that word can be represented orally or in writing, the auditory-visual match must be made between the sounds (phonemes) that are heard and the symbols (graphemes) that represent those sounds. To do this requires association, and accurate recall of the sound/symbol correspondence. To spell orally one must hold the auditorily perceived word in memory, while recalling and naming the symbols in sequence. To do written spelling requires an additional component which is appropriate visual-motor response in a spatial sequence which matches the temporal sequence of the word, as it was perceived auditorily. In view of the high level of integration that is required to perform this complex task, it is not surprising that spelling is frequently a serious problem. Any weakness or deficit in the chain, at the sensory, perceptual or integrative level will give rise to spelling difficulties.

In addition to the difficulties which may be inherent to the child, there are also difficulties which arise as a result of poor teaching practices. Since the introduction, years ago, of the test-study-test method of teaching spelling, spelling achievement seems to be causing greater concern. Although the method was designed to avoid having children study words they knew how to spell, the problem is that children are not taught words they do not know. It is not uncommon to find children who do not recognize and are unable to pronounce words they are trying to spell. The words are not taught; though the children are expected to learn them. Consequently, children learn to say the letter names in a specific order. It the teacher dictates in that order, the children may spell correctly. However, if the order of word dictation is changed, spelling errors are numerous. When children don't know how to say words they are trying to spell, the spelling exercise has little meaning to the child; the spelling principles cannot be generalized to other situations. Words learned in this way for the weekly spelling test are quickly forgotten and unavailable for use the next week.

Another factor contributing to spelling difficulty is the rate of dictation. Children need time to integrate all the functions that are required in doing written spelling. Children with learning difficulties may require twice as much time as the average child because they take longer to isolate and sequence the phonemes, to make the phoneme-grapheme match or indeed even to write the actual symbols, because their motor patterns have not yet reached the automatic level. Many such children omit whole words, endings or parts of words. The problem is related less to spelling ability than to ability to respond quickly. Johnson and Myklebust (1967) state that "Those with learning disabilities can evidence as much as a two-grade discrepancy between the two presentations depending upon the rate of dictation." (p. 237)

For many children, spelling never becomes more than a rote-memory exercise. These are children who have not learned the relationship between sound and symbol (stamp=stab), or the importance of letter order within a word (said=siad). Word lists, as presented in some texts, contribute to the difficulty by including conflicting rather than confirming information in the same exercise. Consider the conflicting information concerning spelling principles a child receives from the following pairs of words: tea-bread; get-gem; rough-cough; enough-ought.

Spelling errors, according to many teachers, are due to carelessness or to the fact that the child has not studied. As a result of numerous errors, the child may be required to write out each misspelled word several times. Unfortunately the child still does not see his error, he does not understand why the word is wrong and may write it correctly the first few times, then wrongly each successive time because the relationship between sound and symbol is not established or meaningful.

A good spelling program, like all programs, is based on the identification of individual needs. Marking each child's daily work offers a fairly accurate procedure for identifying children with spelling problems. In order to determine specific difficulties, the teacher must examine the child's work from a diagnostic point of view. The weekly spelling list or a spelling test provides many clues as to the difficulties a child is experiencing. Among the most popular diagnostic spelling tests is one developed by Kottmeyer (1959) which provides words which test the various phonic elements and also provides an analysis of the errors. The Kottmeyer Diagnostic Spelling Test sharpens a teacher's ability to identify various types of spelling difficulties which can then be applied to other written language situations. When administering a diagnostic spelling test, or indeed any spelling test, the teacher must make sure that each word is enunciated clearly, that its meaning is determined by the sentence in which it is used and that each child has sufficient time to make her/his response. Only when these criteria are met can the possibility of poor teacher dictation be ruled out as a cause of errors.

In analyzing errors, the teacher should consider the following questions:

1. Does the child hear the word? (hand for land)
2. Does the child discriminate the sounds? (send for sent)
3. What sounds are difficult to discriminate? (not for nut, big for beg, etc.)
4. Does the child hear the sounds in the right order? (flet for felt)
5. Does the child hear all the sounds? (stap for stamp)
6. Does the child hear all the syllables? (interst for interest)
7. Does the child confuse letter symbols? (dog for bag)
8. Does the child know how to write or print each letter? To join the letters?
9. Is the child able to visually remember words which are not phonetic? (woz for was, sed for said)

10. Does the child know and apply generalizations with respect to double vowels? (boat, train, etc.); removing the "e" before adding "ing" (take-taking)? doubling the final consonant immediately following a short vowel? (hop-hopping) pluralizing words ending in "y", in "f", in "s", "sh", "ch", etc.

Questions such as these will indicate the content, the direction and the emphasis of a good spelling program.

Before launching any spelling program it is wise to look at some very basic and useful information. There has always been the problem of the regular versus irregular pattern of English spelling. This problem is allayed when one considers the following statements:

> "out of a sampling of three thousand basic words, 85 percent are spelled with complete regularity - that is, each sound is spelled with the same letters in every word, every time it occurs." (Furness, 1964, p. 70)
>
> "About 13 percent of all English words are partly irregular in their spelling. The other 87 percent follow fixed rules." (Flesch, 1966, p. 19)

> "89 percent of words are phonetically regular, only 11 percent do not fit into a regular pattern." (Drake, 1973)

> "Eighty-seven per cent of all syllables in our language are purely phonetic and the words in which unphonetic syllables occur are in part phonetic." (Hays & Wingo, 1948, p. 11)

> "the correct spelling pattern can be predicted for a phoneme sound 90% of the time." (Geedy, 1975, p. 223)

In view of this evidence, it would appear that spelling instruction would be more effective if it were combined with or, a part of, phonics instruction. In this way, the letter/sound relationships are immediately applied in a written (spelling) situation. First graders are amused by simple one-sentence dictation which applies a phonic element just learned (A cat sat in a hat; A frog jogs on a log; I wish for a fish on my dish.) In this way, phonics, spelling and reading instruction are combined in an integrated and meaningful manner. Hay & Wingo (1948) discovered that 62 percent of words in the English language can be formed by knowing only the short vowel sounds, consonants and consonant blends. What a wealth of written language is available to the child who has been taught to use the basic phonic elements.

The next large category of words in English spelling includes those which follow a specific generalization. Cotterell (1970) suggests that even first graders may be taught simple but very useful generalizations such as 1) no word in English ends in v or j, 2) qu always go together, 3) short words tend to end in double l, s or f. (tell, brass, puff)

Other generalizations are outlined in skills checklists for different grade levels and include the following:

1) the use of "e" to make a vowel long (mad-made)
2) two vowels together, the first is usually long (boat, train)
3) the use of c and g before e, i and y (cent, city, cycle, gem, ginger, gym)
4) the use of k to represent the /c/ sound before e, i and y (keg, kill, sky)
5) the use of gu to represent the /g/ sound before e, i and y (guess, guide, guy)
6) the use of t before ch to keep the vowel short when no other consonant is heard (match, ditch, but not in ranch or lunch)
7) the use of d before ge to keep the vowel short when no other consonant is heard (badge, ridge, but not in flange or cringe)
8) the removal of "e" before adding "ing".
9) doubling the final consonant after a short vowel before adding a suffix.

10) the formation of plurals of words ending in s, y, ch, sh, f and y.

This list of generalizations is not all-inclusive, since its purpose in this context is to indicate the scope of phonics instruction which should be integrated with spelling instruction.

The last category of words includes that 11 to 15 percent of words which are not phonetically regular and do not conform to the pattern generalizations as mentioned above. This list includes words such as the, said, was, could, would, who, any, enough, you, they, etc. Since the list of irregular words contains many high utility words, it is essential that they be taught to the stage of automaticity. Shefter (1968) suggests that spelling must become as automatic as writing your own name. He states that, "your spelling will improve when you learn to treat other words the same way. Reduce them to the habit level, make them a part of you." (p. 2)

Remedial Procedures

To reduce the spelling of words to the automatic or the sensory-motor habit level, as suggested by Furness (1965), requires that children with specific difficulty in spelling use an approach which will incorporate, strengthen and integrate the visual, auditory, kinesthetic and tactile modalities. One of the most effective remedial procedures has been the Fernald technique or an adaptation of it.

Multisensory spelling program

Hill and Martinis (1973) have described an adaptation of the Fernald multisensory technique which includes the following steps:

1. Present the target word.
2. Child looks at the word, closes eyes to visualize it. Checks mental image with printed form. Repeats if necessary.
3. Given a list of 12 words with similar beginnings, endings or other similar features, the child locates and circles five repetitions of the target word which appear among the twelve.
4. Given a page, on which the target word has been reproduced several times, each time with one letter missing, the pupil fills in the appropriate letter in each reproduction.
5. In a line or lines of scrambled letters, which includes the letters of the target word, the child begins at the left and works in a left-to-right direction, circling in sequence the first letter, then the second, then the third, etc. as the letters appear in the target word.
6. Indicate by dashes, the number of letters in the word. The child writes the word.

7) Child writes the word from memory without any cues. Consilia (1976-77) describes her adaptation of the Fernald multisensory technique in the following:

> "Have the children say it; hear it; listen to it carefully; spell it orally in parts; write it in parts; write it as a whole word." (p. 188)

She stresses the fact that children must hear the parts in sequence and hear them as they write them.

Group Fernald technique (Nienstad, 1968; pp. 435-437,440)

The following procedure, also adapted from the Fernald technique, was developed for use with a group of seventeen juniors who referred to themselves as the "dummies". By using the method fifteen minutes each day, Nienstad found that performance in reading,writing and spelling improved quite disportionately to time spent. In one activity, pupils were able to improve auditory discrimination, handwriting, spelling and word attack skills, including phonics and syllabication.

1. Prepare a duplicated sheet of words in large handwriting, appropriate for the grade level. Each student has her/his own sheet.
2. Have students trace the letters with the index finger, as you pronounce the phonemes. It is important that students keep

their fingers on the paper and trace the letter at the same time as the teacher says the phoneme slowly, and as separately as possible. Draw attention to any specific phonic generalization.

3. Repeat the word, this time saying the syllables slowly. Direct the students to draw a line under each syllable as the teacher says it.
4. Students trace the word, by syllable, as they say each syllable.
5. Write the word from memory in its entirety, saying each part as it is written.

Furness seven-step spelling method (Furness, 1965, p. 44)

The Furness spelling method is designed to create a specific image of the word. The image may be a) the sight of the word, b) the sound of the word, c) the way it feels when written and/or d) the way it feels when spoken.

1. Listen carefully to the word being pronounced.
2. Check to see if you have a correct aural image of the word. See that each syllable you see tallies with what you hear.
3. Look at the word and try to make a mental picture of it. Note the letters and pronounce each syllable.
4. Close your eyes. Recall the picture of the word.
5. Pronounce the word and write it as you do so.

6. Look at the word again to reinforce your memory. Write the word in a phrase or sentence.
7. The following day, pronounce the word. Write it as someone pronounces it for you. Check the spelling.

Shefter spelling procedure (Shefter 1968, p. 2, 24)

In his attempt to automatize the spelling process, to learn the feel of the word and to let the hand spell the word, Shefter uses the following six-step method:

1. Write the word in large, well rounded script letters, about twice the size of your normal handwriting.
2. With your finger touching the paper, trace the word, repeating aloud each letter as you trace it.
3. Allow no break in the rhythm until the word is completed.
4. Repeat three times, gradually increasing the writing pace until it approaches the normal speed.
5. Turn the paper over, and as you write the word say anything (name, address, telephone number, etc.) aloud. By talking as you write, you force yourself to make the process automatic.
6. Repeat the procedure until your hand spells the word. Always use the index finger to trace, never a pen or pencil.

Word family procedure

The word family procedure is a major component of a phonics or linguistic reading system. The phonic element or the linguistic unit forms the pattern for a multitude of new words. The units progress in difficulty from simple ones such as at (cat, mat, fat, etc.) and an (can, man, pan, tan) to complex units such as ought (thought, brought, bought). Pattern spelling seems easier for children who have difficulty discriminating sounds and sequencing them in correct order. Although there are spelling programs which follow the principles of word family spelling, the phonic or linguistic reading program can provide the impetus for the spelling program. In this manner, reading and spelling are meaningfully coordinated. Support for this position has been expressed by Harris (1961), Durrell (1956) and Flesch (1966). Flesch expresses his opinion in the following:

> "Reading and spelling are two sides of the same thing, and the trouble starts as soon as you try to separate the two. The only way to teach reading is by teaching spelling at the same time." (p. 35)

Organic spelling (Ashton-Warner, 1965, p. 55)

The organic spelling procedure developed by Ashton-Warner is a major component of the reading program, since the spelling program consists of those words which the child needs to develop his/her own stories for reading. The procedure outlined by

Ashton-Warner is as follows:

1. All children are sent to the blackboard to work.
2. Each child "writes up" her/his own words.
3. Each child spells the words orally.
4. Children hear each other spell words.

Visualization-Impress Method

The visualization-impress method is a method developed by R. Barsch (1974) and described in his book A.E.I.O.U and Sometimes Y. Its subtitle "109 ways to enjoy and improve spelling in the classroom" indicates the contents and purpose. The procedure is based on the following characteristics:

1. Spelling consciousness is the main goal.
2. No specific testing of words is recommended.
3. Visualization is the key to spelling competency.
4. Spelling involves a total body action.
5. A fixed period of time must be allocated.
6. Temporal pacing is critical to success.
7. Words remain on constant display.
8. A daily check of visualization progress occurs.
9. The weekly test is conducted in narrative context.
10. Teacher enthusiasm is crucial.

The visualization-impress method was designed for regular classroom use and provides activities for whole class responses, group or individual responses.

5L Spelling procedure

The 5L spelling procedure is a combination of the Furness approach and the Fernald technique. The 5L's refer to Look, Listen, Link, Locate, Learn.

1. Look at the word and try to make a mental picture of it.
2. Listen to the way words are pronounced. Do you hear all the sounds or syllables in the word?
3. Link the letters you see to the sounds you hear as you pronounce the word.
4. Locate the trouble spots. Underline or circle any letter or letters which you think may cause trouble.
5. Learn the word through tracing and saying the sounds or syllables as you trace. Repeat the learning step until the word has been mastered.

Morphographic Spelling

Morphographic spelling is a relatively new spelling program designed for use in classrooms from grades four to eight. The program is divided into 140 teacher-directed lessons requiring from 20 to 30 minutes per day. Underlying morphographic spelling is the principle that spelling must be mastered to the point where it transfers smoothly and automatically to writing. Detailed information about the program and the materials is available from the publishers, Science Research Associates.

Re-arranged spellers

Some spellers are arranged so that the words of each lesson pertain to a particular theme rather than to a specific phonic or linguistic principle. If the teacher wants to integrate spelling lessons with phonics lessons, there is no reason why the words listed cannot be rearranged according to the order in which the principles are taught. It is a simple matter to flip through the pages of spelling lessons and sort out and list all words which contain the short vowel sounds and are phonetically regular. Then the teacher may wish to include the consonant digraphs th, sh, ch, and wh. When long vowels are taught, the teacher selects and lists all those words which have vowels made long by the use of final "e" and then a second vowel (oa, ai, oe, etc.). The rearranged spelling list of the Dent's Speller, Grade 4 (1959 edition) is included in Appendix VI as an example of how spellers may be rearranged to reinforce phonic and reading skills.

Suggested remedial activities

1. To teach children to listen for and discriminate the sounds in a word, provide each child with a dittoed sheet which has three columns, titled Beginning, Middle and End. A page such as this can be used in a variety of ways.

    1) Write the sound you hear at the beginning of mud.

    2) Write the sound you hear at the end of street.

    3) Write the sound you hear in the middle of log.

    4) Where do you hear the sound of "m" in mother?

    5) Where do you hear the sound of "m" in clam?

    6) Where do you hear the sound of "m" in hammer?

2. The short vowel sounds present a serious auditory discrimination problem for some children. In order to help them discriminate between /a/ and /e/ for example, or between /o/ and /u/, it may be necessary for the teacher to show the different vowel sounds by exaggerating the mouth position or by giving the child a verbal clue to remember, such as "olive" for short 'o' sound, and "umbrella" for short 'u'.

Providing picture clues for each of the short vowel sounds may be necessary for some children for whom this is a serious problem. A small card with a picture to represent the sound of each vowel with the letter printed under each may be taped to the child's desk for easy reference.

3. Practice in vowel discrimination may be given by providing each child with five vowel cards - small cards with the letter 'a' on one, the letter 'e' on another, 'i', 'o' and 'u' on the other cards. The teacher pronounces a word, the child holds up the letter card which represents the vowel sound. This may be a group or class activity, if, when the children hold up their cards, they turn the letter so the teacher can see it. Regular practice of this type may be used to reinforce other spelling skills.
4. There are children who omit letters, probably because they do not hear them. Practice in listening for the number of sounds should begin early. In early first grade, children can be taught to clap as the teacher says the sounds in a word slowly. (m-a-t = 3 sounds, = 3 claps). A group may be sent to the chalkboard for the same type of exercise. This time, instead of clapping, the child will make strokes or horizontal dashes

on the chalkboard. The child listens to the sounds as the teacher says them slowly and makes a horizontal dash for each sound that is heard (lamp = _ _ _ _). As children get older they are able to count on their fingers the number of sounds they hear. Since, in the beginning, each sound is represented by one letter, children learn that if they hear four sounds, there must be four letters in the word. This type of exercise increases in difficulty until the children are able to recognize and count the syllables in a multi-syllable word.

5. Exercises as mentioned in the previous four activities may be tape-recorded. The child then works at a listening centre. The Language Master may be used to provide the necessary practice.
6. Visual memory for words may be improved by teaching a child how to look at a word, to discriminate its special features and to verbalize (say to him/herself) the word as it is seen. The immediate follow-up to the visualization and verbalization would be printing or writing the word from memory. Visual memory practice of this nature may be begun very early in the first grade, using single letters or numerals for the activity. The important thing is to have the child verbalize

in order to reinforce memory. In middle grades, this type of visual memory activity may be used to teach children to visualize and verbalize a multi-syllable word by word parts rather than single letters.

7. Mnemonic devices are sometimes the only means available to distinguish similar words or difficult words. The following are mnemonic:
    - the m_eat_ that you eat has the word _eat_ in it.
    - the word four meaning the number four has four letters in it.
    - practice as a noun has the word "ice" in it.
    - the position of a prefix and a suffix may be related to the positions of p (for prefix) and s (for suffix) when saying the alphabet; p comes before s, so prefix comes before the root word and suffix after.
8. For children who are unable to keep up to the pace of dictation, tape-record the dictation and allow the child to do the spelling dictation at her/his own speed. An alternative procedure is to have an older or more capable student give the child her/his spelling dictation.
9. Imitating children's errors has been shown by Kauffman et al (1978, p. 217-222) to increase achievement significantly. Along with daily instruction which includes writing the word

in a salt tray, on the chalkboard, making the word with link letters and then writing the word on paper, the teacher draws attention to the child's errors by writing the word incorrectly as the child has done. The teacher then writes the word correctly, has the child compare the correct with the incorrect, then the child writes the word correctly. In essence, the three steps are 1) this is the way you wrote the word, 2) this is the way it should be, 3) you write it the right way.

10. Games such as Hangman, Rummy, Scrabble or Anagrams are enjoyed by children and promote good spelling.
11. Crossward puzzles provide another spelling activity. The teacher or an advanced pupil may create a crossword puzzle from the current spelling list.
12. Children can work in partners to study their own spelling lists and to give each other a trial test.
13. The old-fashioned Spelling Bee is still an enjoyable activity if used wisely. The child who is the very poor speller might be the one to dictate the words. In this way s/he gets the practice of saying the words, hearing the other student spell them, and must check if they are spelled correctly.

14. Spelling Train is a version of the old Spelling Bee. Sides may be chosen. The leader of each team is the engine as long as s/he spells the words correctly. When a child mispells a word, s/he goes down to the end of the train (the caboose). A very poor speller might be the scorekeeper, who would tally the errors each side makes.

15. Children with spelling difficulties often show improvement when they are taught to type. In typing, because the formation of the letters is never a problem, the child is free to concentrate on the sequence of the letters within the word. Internalizing the letter name and letter position on the keyboard seems to reinforce memory.

16. Parents are asked to help their children more frequently with spelling than any other subject. Furness (1965, p. 64) has described a procedure which teachers might suggest to interested parents.

    1) Write the word the child is to learn as large as you can on a sheet of paper. Use the form of writing the child is using at school.
    2) Say the word and have the child say it.
    3) Have the child trace the word with the index finger. As the tracing is being done, the child slowly says the word.
    4) The child continues to trace the word while saying it slowly, until s/he thinks s/he can write it from memory.

5) Cover the model and ask the child to write the word from memory.

6) The child compares her/his written word with the model. If correct, have the child write it again independently. If incorrect, repeat learning steps 1-5. The child should be required to write the word independently several times to ensure that the spelling has been mastered, that the child has the visual, aural and kinesthetic image of the word.

To summarize the essence of this chapter, are the following points listed by Geedy (1975) in an article entitled "What Research Tells Us About Spelling":

1. That 15 to 20 minutes be devoted daily to the direct teaching of spelling from the middle of second grade through completion of elementary school.
2. That reading and spelling be coordinated and that phonics and word analysis skills be practised in spelling.
3. That words are learned more efficiently from word lists rather than in context.
4. The criterion for word selection should be based on frequency of use, permanency and utility.

5. A linguistic approach to spelling as well as reading is favoured by research reporters.
6. The crossing and integrating of visual, auditory and kinesthetic modalities are needed before spelling becomes an automatic process.
7. The more meaning a word has for a child, the more easily it is remembered.
8. No one channel or approach is the effective answer for teaching every child how to spell.
9. Sentence and paragraph writing are the most important activities to encourage automatic spelling.
10. To apply these theories requires a knowledgeable and sensitive teacher.

REFERENCES

Ashton-Warner, S. Teacher. New York: Bantam Books, 1965.

Barsch, R. A.E.I.O.U. and Sometimes Y: 109 ways to enjoy and improve spelling in the classroom. Canoga Park: Ray Barsch Centre for Learning, 1974.

Consilia, Sr. M. Steps to spelling success. Academic Therapy, 1976-77, 12:2, 185-195.

Cotterell, G. C. Teaching procedures. In Franklin and Naidoo (eds.) Assessment and teaching of dyslexic children. London: Invalid Children's Aid Association, 1970.

Drake, C. Special remedial approaches for the learning disabled adolescent. Presentation to the Atlantic Conference of the Association for Children with Learning Disabilities, Halifax, 1973.

Durrell, D. Improving Reading Instruction. New York: Harcourt, Brace and World, Inc., 1956.

Fernald, G. Remedial techniques in basic school subjects. New York: McGraw-Hill Co., 1943.

Flesch, R. Why Johnny Can't Read. New York: Harper and Row, First Perennial Library edition, 1966.

Furness, E. Spelling for the millions. New York: The New American Library, 1965.

Geedy, P. A. What research tells us about spelling. Elementary English, 1975 (February) 233-236.

Harris, A. J. How to increase reading ability. New York: David McKay Co., 4th edition, 1961.

Hay, J. & Wingo, C. Reading with phonics. Chicago: J. B. Lippincott Co., 1948.

Hill, C. H. & Martinis, A. S. Individualizing a multisensory spelling program. Academic Therapy, 1973, 9:1, 77-83.

Johnson, D. & Myklebust, H. Learning disabilities: educational principle and practices. New York: Grune and Stratton Inc., 1967.

Kauffman, J. M., Hallahan, D., Haas, K., Brame, T. & Boren, R. Imitating children's errors to improve spelling performance. Journal of Learning Disabilities, 1978, 11:4, 217-222.

Kottmeyer, W. Teacher's guide for remedial reading. St. Louis: Webster Division, McGraw-Hill Co., 1959.

Nienstad, S. A group use of the Fernald technique. Journal of Reading, 1968, 11:6, 435-437, 440.

Science Research Associates. Morphographic Spelling - because it works. A brochure distributed at the First Canadian Congress of the Association for Children with Learning Disabilities, Ottawa, 1977.

Shefter, H. 6 minutes a day to perfect spelling. New York: Washington Square Press, 1968.

3. HANDWRITING

Before a student can concentrate on the content of a specific subject, s/he must be able to reduce the act of handwriting to the automatic level. According to Johnson and Myklebust (1967, p. 208) "motor patterns for writing should become so automatic that it is unnecessary to concentrate on the formation of the individual letters while expressing ideas". There is a large number of children who are unable to complete assigned work, to make notes, to write examinations and to complete examinations in the allotted time because of difficulties in handwriting. Dispensations in the form of oral reporting or oral examinations are usually given to students for whom written expression is an insurmountable task. Carter and Synolds (1974) believe that these students "try too hard". Invariably, they squeeze the pencil too hard, press so firmly on the paper that the impression is left on the pages underneath; they become tense and rigid and often purse their lips as an indication of their frustration. In spite of the effort expended, they progress slowly, rarely finish on time, and their work is messy, complete with many erasures.

Difficulties in writing may be related to one or any combination of the following causes: 1) disorder in visual-motor integration,

2) deficit in revisualization, 3) poor instruction. A disorder in visual-motor integration is usually referred to as dysgraphia. The student who is dysgraphic can recognize and identify the visual image but is unable to execute the motor pattern. The dysgraphic child differs from the dyslexic in that the dysgraphic child can identify, recognize and read symbols and words but cannot reproduce (copy) them (Myklebust & Johnson, 1967). The dysgraphic tends to compensate for this visual-motor deficiency by developing auditory verbal skills.

The child who is deficit in revisualization is able to identify, recognize and read symbols, words, etc. when s/he sees them, but is then unable to revisualize them or retrieve them from memory. Have you ever been asked "What does a "b" look like?" Children with revisualization difficulties can copy but, do so slowly because they must constantly refer to the model.

The third cause is related to poor instruction. Traditionally, a great deal of emphasis has been placed on handwriting instruction because it was viewed as a level of one's literacy. Recently, however, the form and quality of handwriting has been given less emphasis. In Education in the Primary and Junior Divisions (1975(b)), the Ministry states:

> "Children need to practice the technical aspects of writing and making letters, but only to the extent that they are encouraged to see the purpose and use of writing for communication." (p. 59)

Since a specific amount of time for instruction is seldom indicated, the formal study of handwriting is often bypassed (Otto, McMenemy & Smith, 1973) and children are left to devise their own systems of writing and printing. Many children laboriously 'draw' the letters they see written or printed on the chalkboard. It is obvious in such cases that formal instruction is lacking and that insufficient opportunity is given to allow development of required automatic motor response. Hofmeister (1973) suggests that other poor instructional practices include 1) practice without supervision, 2) no immediate feedback, 3) failure to provide good models and 4) no differentiation between good and poor work. Although poor instruction may be the most frequent cause of handwriting difficulties, it is the one problem that is easiest to remediate.

To a certain extent it is fortunate that the pendulum has swung from writing as an art form to writing as a tool for communication. In so doing, however, form has been sacrificed to such an extent that communication becomes a problem in terms of legibility. According to Otto, McMenemy & Smith (1973), the overall objective of handwriting instruction should be legibility. Towle (1978) specified that the aim of handwriting instruction should be "to help children write legibly and neatly without undue strain". Thus, a compromise should be reached. Otto et al (1973) further suggest that the "teacher should strike a balance in requiring reasonable legibility, while tolerating personal idiosyncracies" (p. 332). Basic, then, to the development of good handwriting and/or printing is the ability to discriminate and perceive the visual image, to transfer the visual image to a motor pattern, to make the necessary directional and spatial judgements, to revisualize as required and to receive good initial instruction.

For many years there has been a controversy as to whether manuscript (printing) or cursive writing should be taught. At the present time manuscript (printing) is taught in the first and sometimes second grade, while cursive writing is not introduced until towards the end of second or the beginning of third grade. According to Frostig and Maslow (1973) and Otto, McMenemy & Smith (1973) cursive writing should begin not later than second grade. Statements from authorities in the field of learning disabilities generally support the introduction of handwriting as opposed to printing, when the child enters first grade.

"Forget the whole nonsense of two systems for learning disabled kids. If you want to get him off reversals, get him writing from the beginning. Sure, it takes longer to teach writing than to teach printing but it doesn't take as long as to teach writing and printing" (Drake, 1973). "Many authorities - among others, Kephart (1971), Cruickshank (1961), and Strauss and Lehtinen (1947) - recommend teaching cursive writing before the child learns to print" (Frostig and Maslow, 1973; p. 331). "All writing should be taught as cursive beginning with the child's very first writing experiences in first grade." (Early, 1973; p. 105) "Use of cursive writing does seem to facilitate visual perception and discrimination and promote a consistent perception of temporal sequences." (Early et al, 1976; p. 72)

These people support the case for cursive writing with the following points:

1. Cursive writing utilizes a rhythmic flow.
2. Words are seen as wholes. All elements flow together so that the child experiences the feel of the word.
3. Cursive writing emphasizes left-to-right progression.
4. Reversals are avoided.
5. Confusible letters (b-d, p-q) are differentiated because their written forms and movement patterns are different.

6. Letter alignment is easier to maintain because the child keeps her/his hand on the page until the word is finished. Spacing is easier because words are seen as discrete units.
7. There is a consistent starting place - all lower case letters start at the base line with an up-sweep.
8. No need to transfer to another system later on, so there is an economy of time.
9. Handwriting is faster than printing.

Although manuscript (printing) was introduced to more closely resemble the printed word and thereby facilitate reading, Early et al (1976) point out that "the almost universal practice of teaching manuscript writing initially may depend more on tradition than on scientific evidence" (p. 73). On the other hand, Otto, McMenemy & Smith (1973) suggest that "there is little evidence to recommend the change to cursive writing. Manuscript writing seems to meet the needs of adults in terms of both speed and legibility" (p. 338).

With remedial pupils who are continuing or repeating first grade or beginning second grade, it often is the policy to teach cursive writing in an effort to reduce the confusion of similarly formed letters as well as reduce the directionality problems. Furthermore, remedial pupils were learning a new skill which gave them an advantage over their peers in the regular classroom. Whether one teaches manuscript or cursive writing remains very much a personal decision. Whatever system is taught must reflect the teacher's dedication to that system and its appropriateness for a specific child at a specific point in time.

As with other learning difficulties, teaching procedures are based on a diagnosis of the child's specific problem. The best diagnosis is based on an observation of the child as s/he works. As Johnson and Myklebust (1967) explain "watch the dysgraphic child write because this performance gives an indication of the deficiencies to be corrected" (p. 201). In watching the child, note how the child begins the task. What does the child do as s/he works? Does the child watch her/his hand? Is the child comfortable? Has the child the proper tools to work with? As you observe the child, note especially her/his grasp of the pencil, how is it held? Is it held so far down that the child's fingers are touching the lead and consequently smudging the paper? Is it held so high up that the child is unable to maintain proper control? Are the fingers properly placed? Next, take note of the child's posture at the desk. Is the child sitting upright with feet flat on the floor or is the child slouching over the desk with her/his head propped up by the other hand? Is the desk and chair of the appropriate size and height? Does the child hold her/his book in place with the non-writing hand? Take note of the child's movements. Is s/he able to make straight lines a half space or full space high? Is s/he aware of the need for word spacing or do all letters run together as one long word? Does the child sequence the letters correctly? Are the letters in the correct orientation? Does the child become obviously tense while performing the task? These, as well as other incidental observations provide the teacher with information as to the source of the difficulty. Observe also the energy which the child puts forth in attempting to accomplish the task. Watching a child as s/he struggles to make a letter in the right orientation, size and spacing helps the teacher understand why the printing or writing task is so tiring.

There are also those children who seem to be able to hold in their memory only one letter at a time. As a result, the child must continually look up and down from the chalkboard. They must check and recheck each letter of each word in each sentence to be sure it is correct. Little wonder that such children come to dislike "boardwork", and must work slowly to completion.

For diagnostic purposes, the sentence "The quick brown fox jumps over the lazy dog" provides excellent practice in that it includes every letter of the alphabet. Write or print the sentence on the chalkboard and ask the child to copy it on her/his paper. Time the child, allowing two or three minutes for completion, observing carefully as the child prints. Towle (1978) offers an alternative sentence. "The quick brown fox just came over to greet the lazy poodle" (p. 372), which may be used as a second sample, made at nearpoint. It is important to compare far and near-point copying. For children with extreme difficulty in far-point copying it is wise to provide them with the text book, or a copy of the questions or sentences. This eliminates the necessity of looking up and down when trying to copy.

Handwriting (or printing) instruction must be arranged to minimize frustration and ease the total learning and teaching process. Based on an observation of the child's performance, the teacher may then proceed to individualized instruction. Here, the goal is to motivate the child. This requires the full participation of the teacher; the task should not be left to the child alone. An effective writing (or printing) lesson includes the following steps:

1. The teacher presents a large clear visual pattern of the letter on the chalkboard or acetate (if using an overhead projector).
2. The teacher traces the letter, verbalizing as the movements are made - swing up, straight down, up and dot would be an appropriate verbal direction for the letter "i", for example.

3. Have the children trace the letter in the air several times. This "skywriting" as Enstrom (1972) calls it, appeals to most children. Teacher observes as the children skywrite, to see where they start and the direction of their movements.
4. Have the children make the letter on the chalkboard, tracing, if need be, the teacher's model. Children having difficulty may need more tracing, to have their hands guided, or, indeed, to close their eyes so that they can concentrate on the motor pattern. Encourage the children to verbalize their movements. When the movement pattern is learned, children are then ready to work on worksheets.
5. Provide practice worksheets, which have lines with the letter model to be traced and a line underneath for the letter to be copied. (See Appendix). When preparing practice sheets, the teacher should be consistent about starting each letter at the base-line with a swing-up movement. Check each child's sitting position as well as the pencil grasp.
6. Supervise the practice, being alert to those who may need re-teaching.
7. Associate the sound as the child writes the letter. In this way you establish the bond between sound and symbol.
8. Apply the written (or printed) letter to a word which the child can identify.

These steps provide for the integration of motor, kinesthetic, tactile, visual and auditory modalities as a means of overcoming the child's learning difficulty, whether the problem is one of executing the motor pattern, of transforming the visual to the motor, or of revisualizing the symbol.

In teaching handwriting, the sequence of letter introduction should be based on the kind of movements involved in the letter formation. Letters having the same basic movement pattern should be grouped together. The swing up, straight down movement pattern as found in the letters i, u and t is probably the easiest and should therefore be taught first. Towle (1978) reports the following sequence

1. The swing up letters: i, u, w, t, r, s.
2. The swing up and over letters: n, m, v, x.
3. The swing up and turn back letters: e, l, b, h, k, f.
4. The swing over and turn back letters: c, a, o, d, g, q.
5. Some more swing up letters: p, j.
6. Some more swing up and over letters: u, z, (p. 375).

The question of 'joining letters' is of extreme importance, as it creates many problems for children learning to write. Consideration should be given to the following:

1) Letters joined to b: bi, bu, be, bl, bt, bc, ba, br, bs, by
2) Letters joined to o: oi, ou, ow, oc, ol, ot, oo, oa, oc, od, og, op, or, os, om, on, ov, oy, os, oz
3) Letters joined to w: wi, we, wh, wl, wt, wo, wa, wr, ws
4) Letters joined to v: vi, ve, vl, vo, va, vy

Remedial Procedures

As there is no one specific procedure which is appropriate for all children of all levels, the following strategies are offered as techniques for teachers to use with individual students.

Relaxation training - Carter and Synolds (1974) developed this procedure of relaxation training because much of the difficulty experienced by children was due to anxiety. Their research indicated that, following relaxation training, efficiency in handwriting increased, that the improvement remained stable, and that it transferred to other class periods.

1. Instructions on how to relax were first recorded on audio tape.
2. The lights were dimmed and children were asked to close their eyes, to listen to and follow the instructions.
3. The audio tape, giving the instructions was played. The time required was about seven minutes.
4. The lights were turned up and the children were asked to copy a paragraph from the chalkboard.
5. No other writing or writing instructions were provided.
6. The procedure took about 20 minutes and was repeated three times a week (p. 236-238).

Warm-up for strengthening muscle tone and coordination - Huerta (1975) has expressed the opinion that muscle tone and coordination are essential components of handwriting. To this end, she developed a series of 'warm-up' exercises to be followed by the whole class prior to the handwriting activity. As she states, "the act of handwriting is in part a physical skill" (p. 48).

1. Arm circles at sides: Arms straight out at sides, shoulder level, make five small circles, then five medium size and finally ten large circles... Now turn palms up and reverse the position and number of times.
2. Close hands tightly. Make a fist, but keep thumbs out. Next stretch hands open and spread fingers apart. Repeat ten times, slowly and strongly.
3. Arm circles at front. Arms straight out at front at shoulder level. Make five small circles, then five medium and then ten very large circles with arms crossing in front of the body. Rest and repeat in reverse direction.
4. "Dry Land" swimming motions. With arms only, do the crawl stroke, then the back stroke, ten times each. Later add the breathing with the crawl stroke.
5. Index and middle finger grip with thumb. Squeeze these two fingers to the thumbs, hold for a count of three, release and relax. Repeat ten times (p. 47-48).

Perceptual-motor approach - Otto, McMenemy & Smith (1973) describe an instructional sequence aimed at improving the motor aspect of the handwriting skill.

1. Involve pupils in establishing a purpose for each lesson.
2. Focus attention on the different aspects of the formation of the letter in order to assist the child in building a mental image.

3. Have the child describe the process as he writes or have him visualize or write the letter as another child describes it.
4. Stress self-correction by emphasizing comparison and improvement rather than quantity.
5. Provide consistent letter form models.
6. Keep expectations regarding the quantity of writing consistent with what the child can realistically produce.
7. Supervise writing or copywork. Do not allow prolonged unsupervised writing periods (p. 343).

Progressive appropriation procedure - Hofmeister (1973) developed this approach to counter the poor instructional practices which contribute to poor handwriting. The major emphasis of this procedure is to lead the child through a series of steps towards more legible handwriting. Prior to the handwriting activity the teacher prepares worksheets, which have the letters to be practiced clearly and carefully written at the top of the page as a model. The page is lined to allow several practice lines below the model.

Step 1. The child completes the first line and informs the teacher.

Step 2. The teacher corrects by overmarking with a "high-lighter" those letters which need improvement. Letters which represent significant improvement are not high-lighted and the child is not required to repeat that letter.

Step 3. The child erases the incorrect portions of letters and traces over the teacher's high-lighter marking. The pupil must trace the whole letter, not just the portions that needed correction.

Step 4. The child moves to the next line and repeats the procedure, writing only those letters which were incorrect in the preceding line (p. 30-34).

Hofmeister indicates that the letters at the top of each worksheet should follow a logical presentation or sequence. Furthermore, he suggests that the child should move as soon as possible, to models of short sentences. The teacher prepares worksheets for each of the letter groupings, then worksheets with short words made from the letters that have been learned, worksheets of two and three word phrases, and finally, worksheets of short sentences made from words which contain the group of letters that have just been practised.

Suggested remedial activities.

1. Chalkboard activities (see Kephart 1960).
2. Painting or fingerpainting on large sheets of newsprint. Frostig and Maslow (1973) suggest some interesting methods for providing practice for the basic manuscript letter strokes. Examples include:

   fences (for the straight strokes such as i and l)

   highways (for the horizontal strokes needed for t and f)

candy canes (letter f)
cat's tail (letter j)
snake (letter s)
clown's nose (letters c, o, d) (p. 327)

Similarly, they suggest some interesting rhythmic strokes to develop the basic rhythmic patterns of cursive writing. Examples include:

hills and valleys (letters x, y, v, up the hill and down the valley)
waves (letters c, a, d)
upper lassos (letters e, l, b, f)
lower giant's teeth (letters m, n, h, k)
upper giant's teeth (letters u, i, t, w)
stringing beads (letters oo, oa)
tails (letters j, g, g, p) (p. 332-339).

3. Writing on the chalkboard. If the lower end of a chalkboard is permanently and appropriately lined, children enjoy the opportunity of practicing there. Furthermore, the teacher is able to monitor this type of practice. When children practice at the chalkboard it is wise to give them only a half length of chalk since it is easier to control.
4. Tracing in picture books, dot-to-dot books, mazes, etc. provide opportunities to develop coordination.

5. Templates and stencils of shapes, designs, letters, provide opportunities for developing fine muscle control.
6. Large crayons, coloured pencils, felt pens or magic markers may be used to practice letter formations on large sheets of newsprint.
7. Use arrows to show the direction of the movement with a green dot to indicate the starting point and a red dot to indicate where to stop.
8. Provide a coloured base line to indicate where the letters sit. In cursive writing, point out that all lower case letters begin at that line with an up-sweep.
9. To develop the feel of the letter in printing, teach the child to print the letter in one continuous movement pattern.
10. Provide desk or classroom reference cards for those letters which a child cannot remember.
11. Use a variety of types of coloured paper and lined paper to allow the child the opportunity to experiment.
12. Teach the correct paper position for printing (parallel to the lower edge of the desk) and for writing (tilted approximately 60degrees to the left for right-handers and 60 degrees to the right for left-handers). If children have difficulty with the slant of the paper, affix to the desk a strip of masking tape parallel to the top of the paper.

13. Teach children that as they work towards the bottom of the page, they push their paper upwards towards the top of the desk.

14. Teach children the appropriate pencil grasp between the thumb and middle finger with the index finger riding on top of the pencil. Teach a child to hold the pencil at the top of the sharpened part. A piece of tape around the pencil or pencil grips (available from A.C.L.D.) help the child remember where to hold the pencil.

15. Tracing letters or words using thin paper placed over the models is an effective activity.

16. For children who have difficulty spacing, a spacer made of coloured paper about one-half inch square can be used. The child places a dot at the right edge of the spacer to indicate where the next word begins. Left-handed children have the greatest difficulty with spacing because it is difficult for them to use the right index finger as a spacer.

17. Until the letter formation becomes automatic verbalize to assist in structuring the movement pattern.

18. Prepared practice sheets with the letter model at the top may be used for daily timed practice (2 minutes). Children can count and record only those letters that are well formed. Copying a paragraph may be another way of providing timed practice. In each case only well formed letters are counted.

19. Provide good models not only for the writing lessons but in all prepared seatwork or boardwork.

20. Be an active participant in the writing lesson.

Left-handed Writers. A word must be said about the left-handed writer, since printing and writing can become a difficult task. When a child shows a distinct preference for the use of the left hand, the teacher must be prepared to instruct the child in the correct use of her/his writing hand. The child should first of all be assured that it is quite acceptable for her/him to use the left hand, but that in so doing s/he must use a slightly different approach than right-handers. Two thing are critically important: 1) the pencil grasp, and 2) the position of the paper. The pencil grasp for left-handers is directly opposite to that of right-handers. The pencil should be grasped between the thumb and middle finger, resting just below the first joint of the middle finger, with the index finger on top. The pencil should be grasped at the top of the sharpening or about one inch from the lead end. When properly held, the end of the pencil should point over the left shoulder. The paper should be placed at an angle of approximately 60 degrees to the right. A piece of masking tape may be affixed to the desk to indicate the appropriate slant for the paper in cursive writing. For printing, the paper is parallel to the bottom of the desk. When the pencil and paper are properly positioned, the left-handed writer can see what s/he is writing and does not need to assume the 'hooked' position which often becomes an entrenched habit that is impossible to break. If given proper instruction from the onset, the left-handed writer should be able to perform as effectively and efficiently as the right-handed writer. However, it is essential that the teacher be aware of the difficulty and be able to demonstrate what to do. It may even require a little practice on the part of the teacher to develop the left-handed writing position to the extent that s/he may be able to instruct the child appropriately.

The purpose of handwriting instruction is to reduce handwriting activity to an automatic level. In doing so, an individual is free to concentrate on the ideas s/he wishes to express, or communicate. This is ultimately the aim of writing - to develop the tool of communication.

REFERENCES

Carter, J. & Synolds, D. Effects of relaxation training upon handwriting quality. *Journal of Learning Disabilities*, 1974, 7:4, 336-338.

Drake, C. Special remedial approaches for the learning disabled adolescent. Presentation to the Atlantic Conference of the Association for Children with Learning Disabilities. Halifax, 1973.

Early, G. H. The case for cursive writing, *Academic Therapy*, 1973, 9:1, 105-108.

Early, G.,Nelson, D., Kleber, D., Friegoob, M., Huffman, G. & Cass, C. Cursive handwriting, reading and spelling achievement. *Academic Therapy*, 1976, 12:1, 67-74.

Enstrom, E. & Enstrom, D. Practical teaching methods for primary handwriting skill. *Academic Therapy*, 1972, 7:3, 285-292.

Frostig, M. & Maslow, P. *Learning problems in the classroom*. New York: Grune and Stratton Inc., 1973.

Hofmeister, A. Let's get it write. *Teaching Exceptional Children*, 1973(fall), 30-34.

Huerta, V. The 'writes' of children. *Academic Therapy*, 1975 11:1, 37-49.

Johnson, D. & Myklebust, H. *Learning disabilities: educational principles and practices*. New York: Grune and Stratton Inc., 1967.

Kephart, N. *The slow learner in the classroom*. Columbus: Charles & Merrill Co. Inc., 1960.

Ontario Ministry of Education. *Education in the Primary and Junior Divisions*, Toronto: 1975(b).

Otto, W., McMenemy, R. & Smith, R. *Corrective and remedial teaching*. Boston: Houghton-Mifflin Co., 1973.

Towle, M. Assessment and remediation of handwriting deficits for children with learning disabilities. *Journal of Learning Disabilities*, 1978, 11:6, 370-377.

4. MATHEMATICS

Just as learning difficulties are experienced in the language arts (reading, spelling, writing) they are apparent in the areas of arithmetic and mathematics. However, McLeod and Crump (1978) have revealed a startling statistic: only eleven percent of those enrolled in programs for learning disabilities in mathematics actually exhibited an identifiable disability in mathematics. If the criterion was met by only eleven percent of the students, why are the remaining 89 percent also enrolled in programs for learning disabilities in mathematics? Much of the blame has been placed on the introduction of new-math into the curriculum. Rappaport (1977) states that: "The gist of all criticisms of new-math is that children are unable to solve problems of every-day life. They have not learned arithmetic computation, nor have they learned to apply whatever skills they have to practical situations". (p. 67). Although Englemann (1969) agrees that new-math has a place in the curriculum, he places the blame on teaching techniques: "While the new-math has sound objectives, the discovery techniques advocated by most new-math programs have no place in an elementary teaching program". (p. 252). Bereiter (1968), more broadly states that "In mathematics nearly everyone fails. It is only a question of when or at what point." (p. 1).

"Many of the problem cases of mathematical difficulty according to Johnson and Myklebust (1967), Otto, McMenemy and Smith (1973) Engelmann (1969) and Bereiter (1968) are the result of inferior teaching. Inferior teaching includes poor methodology, inability to determine the readiness of a child for a specific skill, overemphasis on rote rather than understanding, lack of attention to overlearning or mastery of one skill before another one is taught, and failure to teach the vocabulary of arithmetic and mathematics. Another cause for difficulty in mathematics may be limited intelligence. A mathematical disability or dyscalculia is indicated as the third cause. Dyscalculia, like dyslexia, ranges from mild to severe. Kosc (1974) cites definitions of dyscalculia which refer to a "difficulty with counting" or "a failure to recognize numbers or manipulate them in an advanced culture." Kosc, believing that dyscalculia should be reserved for cases in which a disorder is identified, developed the following definition:

> "Developmental dyscalculia is a structural disorder of mathematical abilities which has its origin in a genetic or congenital disorder of those parts of the brain that are the direct anatomico-physiological substrate of the mathematical abilities adequate to age, without a simultaneous disorder of general mental functions." (Kosc, 1974, p. 165)

A mathematical disability or dyscalculia then, is recognized by disorders in visuo-spatial-temporal organization, right-left orientation, perception and identification of symbols, sequencing, and disturbances in quantitative thinking. To clarify the terminology, examples of each of the disorders as related to mathematics are listed below:

visuo-spatial-temporal organization refers to concepts such as near-far, small-large, up-down, front-back, beginning-end, before-after, early-late, first-last, etc. Included also are concepts of size, form and time.

right-left disorientation refers not only to the accurate perception and duplication of numbers such as 3, 5, 7, 9, 21, etc. but also to the direction of addition, subtraction, multiplication and division.

perception and identification of symbols refers to a difficulty recognizing and naming not only the numerical symbols but also the computational signs such as plus, minus, multiply and divide, greater than, and less than, etc.

sequencing refers not only to the ordering of numbers as in counting but also to the steps applied to the calculation of a problem, whether it be a simple computational problem in addition or a more complex problem-solving situation.

quantitative thinking refers to concepts such as more, less, how much, how long, how far, how big, etc. Children with difficulties in quantitative thinking have problems determining whether they have more or have less as a result of an operation and consequently find it difficult to know whether to add or subtract.

Johnson and Myklebust (1967) identify other areas, which although not a part of the syndrome of dyscalculia, contribute nevertheless to difficulties in mathematics. In the first place there is the question of language itself. The language of arithmetic and mathematics is very specific and contains terms which have a special meaning when related to arithmetic or mathematics (sets, times, left). Other terms such as product, sum, remainder, denominator, etc. become a source of confusion. Auditory memory is perhaps next to cognitive ability an essential requirement for success in mathematics. Good auditory memory is essential not only for learning the basic facts but for remembering and following instructions as well as the steps in a process or in a problem-solving situation. Another factor contributing to difficulty in mathematics is the act of reading. There are many children who are quite capable of performing the arithmetical or mathematical calculations but who nonetheless have difficulty because they are unable to read the instructions or the problem. Text-books at all levels are guilty of including vocabulary and language constructions which are much beyond the grade level for which the material was intended. At the intermediate or senior grade levels, much instructional time should be devoted to teaching children how to read in mathematics. Sternberg and Mauser (1975) present a strong case with respect to the role of reading in mathematics in the following statement:

> "It is conceivable that a child could have the ability to perform at a mathematics level much higher than his present reading level; however, in that many programs combine both aspects of reading and math, the child becomes deficient not only in reading, but also in an area where he actually has no problem." (p. 483)

The authors suggest that since it is "ludicrous to teach a child (mathematics) through the use of one of his deficits (reading)", for learning-disabled children, the "reading factor be partialed out." Similarly, Wahl (1970) suggests that schools "test mathematical ability by having the student do arithmetic problems aloud." (p. 52). This suggestion was made to overcome difficulties with reversals, where, for example, the child knows that 8 + 5 equals 13 but writes 8 + 5 = 31 (the reversed form). The fact that language, auditory memory and reading are contributing factors in mathematical difficulty has been supported by Nall (1970) who studied 137 children from grades one to five with arithmetic retardation. Her information revealed that 56 percent of the children had difficulty in language understanding, 94 percent had difficulty in auditory memory and 89 percent had difficulty with reading.

In spite of the many factors which may give rise to difficulties in mathematics, the major concern according to Otto, McMenemy and Smith (1973) is "that the majority of problems in arithmetic stem from computational difficulties". (p. 289). Lerner (1976) suggests that the "computational skills of adding, subtracting, multiplying and dividing must become automatic." (p. 295). To achieve this level of automaticity requires many opportunities for mastery and overlearning. Then, if the majority of difficulties are attributed to computational errors, the diagnosis as well as the remediation should be directed to the specific area of difficulty.

Although there are many formal and standardized diagnostic tests and surveys available, probably the best diagnostic procedure is as Chalfant (1975) points out "If you watch the child closely, he will tell you how to teach him." These examples illustrate problems which may be discovered through an observation of how the child works.

- in 2 column addition, instead of adding the units (ones) column, then the tens column, the child added together all the digits.
- children have begun simple addition or subtraction at the left side instead of the right.
- in subtraction children have taken the smaller number from the larger, regardless of position.
- not knowing what to do when zero is encountered in any computation.
- not knowing what to do in 2 or 3 column addition, when the units column adds up to 10 or more than 10.
- not knowing whether to add, subtract, multiply or divide.
- having to correct a computational error and not knowing why it is wrong or how to correct.

These examples may appear extraordinary in that they are related to such basic skills. Nonetheless, they are representative of the difficulties experienced by children who are frequently referred from grades three to seven because of difficulty with math. Moreover, in all cases, problems were related to poor or inadequate teaching and lack of mastery learning, rather than to a disability in mathematics. Thornton and Reuille (1978) suggest at teachers "should document the problems and characteristics noted by saving samples of the child's work, by carefully recording anecdotal information and by noting the child's responses." (p. 15). Chandler (1978) follows the task analysis approach when in stating that "It makes sense to find out what students are doing wrong in solving problems, find out what they need to learn to solve the problems and then teach the students that." (p. 368). The diagnostic teaching approach appeals to Fowler (1978) who decries the practice of assigning additional problems of a specific type because of poor performance on "six out of ten problems." (p. 23). It is her contention that the problem is not with the child, but with the fact that the requirements of the task are not adequately mastered. She proposes three steps in the diagnostic process: 1) Which errors is the child making? 2) What is the child's rationale for the errors? and 3) What does the child need to remediate this situation? These recommended procedures require only a careful observation of the child's work and of the child as s/he works.

Frequently, a serious problem may be overcome by reteaching a basic concept. Place value, for example, is a very basic concept, but contributes to many difficulties in addition, subtraction, multiplication and division when children do not understand it. Typically, they don't understand the meaning of "ten" and how it relates to units, or the meaning of a "hundred" and how hundreds may be composed of 'tens' or 'ones'. Place value must be taught with concrete material (straws, sticks, tooth-picks). Children must see that ten sticks can be bundled together to make a "ten" and alternatively, the "ten" may be broken into ten units or ten ones. Only through this type of actual manipulation will children understand place value.

Dunlap and Thompson (1977) state that "When children have memorized the facts, they possess the prerequisite skills to master the multi-digit computational algorithms". (p. 585). They describe a diagnostic tool of the tachistoscope type, (see Appendix VIII A) made of bristal board, into which cards are placed which represent in turn the addition facts, subtraction facts, or multiplication facts. A duplicated response sheet is provided on which the facts being tested and a column labelled "Flash", a column labelled "Analysis" and a third column labelled "Comments" are recorded. Each fact is first presented as a flash exposure. If the response is correct, a check mark is recorded on the response sheet and the next fact is exposed. If the response is incorrect, the fact is exposed again, allowing time for the child to compute the answer. The teacher records the method an/or the materials the child requires to solve the problem in the analysis column, and adds any comments which may be of help in remedying the child's difficulty. Dunlap and House (1976) have worked together to develop a diagnostic program consisting of the following six steps:

1. Determination of a terminal task (a skill or algorithm composed of many simpler skills, whose mastery is required before the terminal task can be achieved).
2. Application of task analysis to identify prerequisite skills to the terminal task.
3. Placement of the skills in a hierarchy showing the relationship of each skill to other prerequisite skills and to the terminal task.
4. Construction of test items to measure each skill on three levels - enactive (concrete), iconic (semi-concrete, e.g. diagrams, etc.) and symbolic (abstract). Care should be taken to be sure that none of the items requires the child to apply skills which occur higher in the hierarchy.
5. Administration of the test. Begin with the lowest skill in the hierarchy and progress upward, one skill at a time.

6. Analysis of performance. Examination and analysis of the skills tested will indicate the specific difficulty as well as the level of representation or understanding (concrete, semi-concrete, abstract) of each skill. From the analysis the teacher can design an instructional program which incorporates what the child needs to perform successfully. (p. 210-211)

Otto, McMenemy and Smith (1973) suggest the development of an informal survey test which may be used to pinpoint weaknesses in the basic computational skills. The survey test, at each grade level, should represent examples of the types of computation the child is expected to master. A teacher who is well acquainted with the program at a specific grade level, would have no difficulty constructing such a survey test. Otto et al suggest that in the areas of addition, subtraction, multiplication and division, errors are related to problems in combinations, counting and carrying and faulty procedures in both addition and multiplication; in subtraction and division the errors are in terms of combinations, counting, faulty procedures and regrouping (subtraction) and remainder difficulties (division). Schonell and Schonell (1965) provide graded diagnostic tests in each of the basic computational areas.

Dunlap and Brennan (1977) offer an additional diagnostic technique which they term the Informal Arithmetic Inventory (I.A.I.)

(p. 389-397) resembling the informal reading inventory in its construction and emphasis.

Informal Arithmetic Inventory

Purpose - to determine the child's needs and to place the child at a point in the instructional program where these needs will be met.

Components -

1. Addition of whole numbers.
2. Subtraction of whole numbers.
3. Multiplication of whole numbers.
4. Division of whole numbers.
5. Fractions.
6. Decimals and percents.

Design - The child is required to complete exercises of increasing difficulty within each of three basic areas - conceptual computational and applications area.

Conceptual area - Does the child understand the meaning of the operation?

Computational area - Can the child compute accurately?

Application area - Can the child use conceptual and computational skills to solve a problem?

Performance Levels -

1. Independent. The grade level at which the child correctly solves 90 percent of the exercises.

2. Instructional - The grade level at which the child solves between 75 percent and 70 percent of the exercises.
3. Frustration - The grade level at which the child solves less than 75 percent of the exercises.

Construction -

1. Select a series of texts which are used for instruction in grades K to 6.
2. Select one of the components for which exercises are to be prepared.
3. Select exercises which will represent the three basic areas (conceptual, computational, application) from the first three-quarters of the text-book at each grade level, and examples of new types of exercises at successive grade levels.
4. Provide approximately 30 to 36 exercises per grade level - 10 exercises to measure conceptual skills, 15 to 20 exercises to measure computational skills, and six exercises to measure application skills.
5. Keep directions and reading skills to a minimum.
6. Construct an answer key as well as a list of the skills being assessed.

Administration -

1. Administer only one component at a time. Provide for the instructional needs as indicated before administering another component.
2. Begin testing about two grade levels below the present grade placement to determine the independent and the instructional levels.
3. Continue testing until the frustration level is identified.
4. Prepare a record sheet which will indicate a child's performance level (independent, instructional, frustration) in each of the three basic areas (concepts, computations, applications).

Interpretation and application - The results of the I.A.I. will indicate the level at which the child has mastery in each of the basic areas. It will indicate also whether a child's weakness lies in the conceptual area, the computational area or the applications area.

Johnson and Myklebust (1967) list 13 disturbances in arithmetic, which might also serve as an informal diagnostic procedure. The list of disturbances includes:

1. Inability to establish one-to-one correspondence.
2. Inability to count meaningfully.

3. Inability to associate auditory and visual symbols.
4. Inability to learn the cardinal and ordinal systems.
5. Inability to visualize clusters of objects; each object in a group must be counted.
6. Inability to grasp the principle of conservation of quantity.
7. Inability to perform arithmetic operations.
8. Inability to understand the meaning of process signs.
9. Inability to understand the arrangement of numbers.
10. Inability to remember the sequence of steps.
11. Inability to understand the principles of measurement.
12. Inability to read maps and graphs.
13. Inability to choose the principles for solving problems. (p. 252)

Although readiness for instruction in mathematics has not been discussed here, Logue (1977) believes that it is as "vital a condition to progress in this field as reading readiness is in its field".(p. 319). According to Bereiter (1968), basic concepts in arithmetic and mathematics are established very early. Quantitative concepts are developed from experiences in which the child is exposed to quantity e.g. some, many, few, more, less, etc. One-to-one correspondence, dividing and remainders are learned incidentally as children share things - candies, cookies, toys, blocks, etc. Concepts with respect to order are learned initially when children experience taking turns - first, second, third, next, last, etc. Early and Heath (1970-71) specify five areas to be examined in order to establish a child's readiness for learning arithmetic and mathematics. The five areas are as follows:

1. The ability to count (one-to-one correspondence).
2. The ability to recognize number quantities.
3. The ability to select a correct number group. (Give me three buttons.)
4. The ability to match number symbols.
5. The ability to recognize number smbols. (Give me the "three".)(p. 203)

Bereiter (1968) and Engelmann (1969) place strong emphasis on readiness, as do those who follow a task analysis or diagnostic teaching approach. Wood (1974-75), in her commentary on practices in teaching mathematics views an approach which presents "a concept before a child is ready for it" (p. 205) as a very destructive practice.

From any one of the various diagnostic procedures outlined here the teacher can identify a child's problem areas as well as readiness for a specific skill. It is then the responsibility of the teacher to use the diagnostic information to provide an instructional program which meets the child's needs. Sternberg and Mauser (1975) recommend the following list of instructional strategies for children who have difficulties in mathematics:

1. Sequence mathematical concepts in a developmental hierarchy.
2. Remove reading as necessary component of arithmetic functioning.
3. Use various learning strategies for instruction.
4. Use concrete materials to facilitate reasoning and meaning in mathematics.
5. Change from the percent correct to a trials-to-criterion model for achievement.
6. Use mastery and overlearning instructional strategies.
7. Use different teacher/student interactions to teach mathematical concepts. (p. 486)

Engelmann (1969) provides an explanation of how a lesson in primary arithmetic should be handled. He suggests that "Arithmetic lessons are to be handled the same way as reading lessons. Work in small groups for about twenty to thirty minutes. Work on a variety of tasks during this period." (p. 253). The following format is suggested:

- 5 minutes devoted to a counting operation.
- 5 minutes devoted to the introduction of a new operation.
- 10 minutes devoted to worksheet problems.

In dividing lessons in this manner, it is possible to review concepts, as well as to sustain the attention of the child through the variety of activities and the pace of the lesson. Most children can attend for a five or ten-minute period but are unable to sustain attention for a long 20 or 30 minute period.

Horowitz (1970) suggests the following outline for a formal lesson:

1. Following analysis of the diagnostic assessment, the teacher gives a five to ten minute lesson to the student.
2. After the lesson, the teacher provides one or two appropriate examples which emphasize the mathematical principles or concepts that were presented in the lesson.
3. The teacher elicits from the student three to five examples similar to the ones presented by the teacher. The teacher asks key questions to see if the student thoroughly understands and/or can demonstrate what has just been taught.
4. The student provides his own examples.
5. Homework. Create four more examples that will demonstrate the principle just taught. (p. 25)

Horowitz believes that only when a child can clearly enunciate her/his own problems does s/he understand the principle that has been taught and is able to generalize it to other situations.

Suggested remedial activities:-

1. Begin instruction with informal procedures - games, hobbies, sharing activities, taking turns, counting the number present.
2. Use concrete materials. Johnson and Myklebust (1967) emphasize that "Only after concrete operations are clearly understood can mental perception and mental manipulation of symbols be expected." (p. 253). Use blocks, beads, buttons, straws, coffee stirrers, marbles, dominoes, playing cards, plasticine, etc.
3. Tape a number line to each child's desk and teach the use of the number line.
4. Provide classroom charts approximately 50cm x 50cm to which the children may refer for addition or multiplication facts. (See appendix for arithmetic charts.) An individual chart may be made for each child.
5. Provide charts that indicate the step-by-step procedure with a green dot above the numbers where the operation is to start and an arrow to indicate the direction of work.
6. Teach children to verbalize as they work.
7. Provide squared paper or turn a lined workbook so the lines run vertically for those children who have difficulty lining up the figures in the appropriate column.

8. Teach children to represent problems through the use of concrete objects or graphically.
9. Allow children to distribute papers, books, pencils, etc. This will make counting practical and teach them in addition, how many more are needed or how many are left over.
10. Use grocery advertisements from the newspaper to make problems practical.
11. Teach that a sign such as the plus sign means not only plus, but "add" and also "and". (6 plus 7, 6 add seven, or 6 and 7).
12. Make sure that children understand the interrelationship and the interchangeability of the basic processes (addition and subtraction, multiplication and division).
13. When teaching addition facts, be sure to teach the doubles early (2 + 2 = 4, 3 + 3 = 6, 4 + 4 = 8, 5 + 5 = 10).
14. Adding 9, which always seems difficult, can be made easier if children are taught to add 10, then count back 1. For example, when asked to add 9 to 8, the child would say 10 + 8 = 18, count back one equals 17 (9 + 8 = 17).
15. The five and ten times table are perhaps the easiest multiplication tables to be learned, and can be taught very effectively through the use of nickels and dimes, since

working with money is generally motivating. One-cent pieces may be grouped in 2's, 3's or 4's to teach the other tables. If the reverse facts are taught at the same time, the memory load is reduced (5 X 2 = 10 and 2 X 5 = 10).

16. The signs greater than (>) and less than (<) have always caused confusion. Teach the child to put two dots at the larger number (one dot at the top of the larger number and one dot at the bottom of it) and then one dot at the other smaller number. By pointing the one dot at the smaller number to each of the dots at the larger number the direction of the sign is always correct (6 > 3) and (5 < 7).

17. Word problems are often difficult for children to understand. Ask them to represent the problem by drawing a picture or by acting it out.

18. Be sure that children know the vocabulary of any word problem.

19. Monopoly is an excellent game to teach multiplication, division, interest, percent.

20. Games such as Snakes & Ladders, Parchesi, etc. can be used to reinforce addition facts, if a pair of dice is used rather than just one die. Children have to add the numbers before they move.

21. Snap played with 2 decks of playing cards from which the face cards have been removed, is a good way of reinforcing the recognition of numerals and number groupings.

22. Use the Language Master to provide practice in basic facts.

23. Taperecord, at a slow pace, the basic facts to be learned. Helms (1970-71) describes a method whereby the number facts are taperecorded and the child is first required to close her/his eyes and listen. The tape is replayed periodically. The next procedure is to change the sequence. This time the teacher gives the fact and its sum, then repeats the fact, and the child gives the sum. The final step for the child is to listen to the fact stated as the child holds the flash card.

24. A box of coloured felt shapes (squares, circles, rectangles, triangles) with their duplicates cut into halves, quarters, thirds, etc. for matching purposes provides a good resource when fractions are taught. For example, the child may be asked to find the parts to make the circle whole. When children become adept at finding and matching the parts to the whole they are taught names such as halves, quarters, etc.

25. Emphasize that adding means putting together, subtracting means taking away, that multiplication is a series of additions or a short way of adding and that division is subtraction

of equal groups. Children need to understand that if the answer is going to be larger, the operation must be addition or multiplication. If, on the other hand, the answer is going to be smaller, the operation must be subtraction or division.

26. "Take the pupil through each step of the operation by having him work the problem aloud", is considered the basic remedial technique by Otto, McMenemy and Smith (1973, p. 291). Ask the child questions such as "What does this sign mean? What does it tell us to do? Where do we begin?" etc.

27. Ask students who consistently make reversals to do the operation orally; then have them check their written work.

28. When children do make errors, be sure they know what they are doing wrong and why and that they know how to correct their error.

29. Teachers should always check their pupils' work. This is the kinds of difficulties the children are experiencing can be known. If the error is one that is common to a number of children it is obvious that the lesson must be retaught.

30. Pair a child who is poor in math but good in reading with a child who is good in math but poor in reading. This will pay dividends for both children.

31. Provide a young child with her/his own private tutor - a pupil from a higher grade level.

32. Practice sheets with sets of addition facts (facts with one, facts with two, etc.) may be used for quick timed drills. How many can you say in one minute? A child can graph her/his daily progress. (See appendix)

33. Allow a group of children to do their work at the chalkboard. In this way the teacher can see at a glance what each child is doing and where each child's difficulty lies.

34. Teach children to ask themselves three basic questions: What do I have to find? What am I given to help me find it? What do I do or what operation(s) do I use to find it?

35. Provide short daily practice periods to reinforce basic facts and to keep operations fresh in the minds of the students in order that computational skills become automatic (Lerner, 1976).

36. Teach a child with difficulties the easiest means of performing an operation. Don't confuse her/him by providing alternative methods.

37. Temporal Learning by Barbara Bateman (1968) presents many suggestions for teaching time concepts.

38. Deal Me In by M. Golick (1973) is a source of card games for reinforcing mathematics skills.

As with other learning difficulties, success essentially depends upon "individualization, motivation, systematic teaching and a careful working out of methodology." (Frostig, 1973, p. 261). To be effective, instruction must be based on the following components: 1) diagnostic-teaching or a task-analysis approach, 2) instructional sequence based on the child's level of readiness, 3) use of concrete materials, 4) opportunity for mastery or overlearning.

That mastery should be a foremost objective in the teaching of mathematics is supported by the following critical statements from a recent article entitled "Modern Math and the L.D. Child":

> "Diagnosis has revealed, in almost all of the cases, lack of mastery of the math facts or combinations."
>
> "It would appear that children are often mistakenly labeled 'learning disabled' simply because they lack mastery; and the lack of mastery appears, all too often. to be related to the current method of teaching math." (Wood, 1980, p. 282-283).

To return to the issue of traditional versus new-math, it is important to be aware of the opinions expressed by authorities in the field of learning difficulties or disabilities.

> "The arithmetic program for dyscalculic children should be kept as practical as possible. Problems for everyday living should be stressed... Goals should be considered in terms of the individual's attaining independence in society; his need for giving and receiving the correct change when making a purchase, recognition of coins and their values, paying bills, balancing a cheque book, determining whether he has enough money for dinner or bus fare..." (Johnson and Myklebust, 1967, p. 270).
>
> "Beat the new-math into the ground. It's the worst thing that has ever happened to L.D. kids." (Drake, 1973).
>
> "... we are continuing to expend our resources in the defense of traditional mathematics and the reputation of modern mathematics rather than attempting to answer the initial source of our concern. Why can't Johnny compute?... A more direct approach would be to develop diagnostic procedures that accurately measure the deficiencies in mathematical skills, causing Johnny's difficulties..." (Dunlap & House, 1976, p. 210).
>
> "It should be obvious that mathematics is not or should not be required study for all children..."

> not be required study for all children...
>
> For the 40 percent who are capable of learning mathematics, the new-math should not only be kept in the school curriculum but should be developed even further. For the 60 percent who are frustrated by the new-math, a return to the study of the basic arithmetic skills is in order...
>
> ... It becomes clear that what we need is a two track program - a strong mathematics program for the 40 percent and a meaningful arithmetic program for the 60 percent." (Rappaport, 1977, p. 8-9).
>
> "I believe that the teaching of basic skills is what is needed by the handicapped students with whom we work. If students can be taught basic math skills, they will have some of the competencies necessary for employment in our competitive society." (Chandler, 1978, p. 365).

In citing a statement made by Kendall and Mirick (1915), Otto, McMenemy and Smith (1973) suggest that the goals of remedial arithmetic should be "less academic and more practical; less abstract and more concrete; less in attainment and more a useful servant." (p. 277). Regardless of the opinions of specialists, it remains the responsibility of the teacher to determine what needs to be taught to a specific child at a specific time, taking into consideration the teacher's competencies as a teacher, the child's competencies as a learner and the situation or environment in which they are placed. Having done so, the teacher must then teach efficiently and effectively and provide for mastery learning.

REFERENCES

Bateman, B. Temporal learning. San Rafael: Dimensions Publishing Co., 1968.

Bereiter, C. Arithmetic and mathematics. San Rafael: Dimensions Publishing Co., 1968.

Chalfant, J. C. Investigating children's learning styles. Presentation to the International Association for Children with Learning Disabilities. New York, 1975.

Chandler, H. N. Confusion confounded: A teacher tries to use research results to teach math. Journal of Learning Disabilities, 1978, 11:6, 361-368.

Drake, C. Special remedial approaches for the learning disabled adolescents. Presentation to the Atlantic Conference of the Association for Children with Learning Disabilities. Halifax, 1973.

Dunlap, W. P. & Brennan, A. H. Diagnosing learning difficulties via the I.A.I. Academic Therapy, 1977, 12:4, 389-397.

Dunlap, W. P. & House, A. D. Why Johnny can't compute. Journal of Learning Disabilities, 1976, 9:4, 210-214.

Dunlap, W. P. & Thompson, C. S. Diagnosing difficulties in learning basic math facts. Journal of Learning Disabilities, 1977, 10:9, 585-589.

Early, F. & Heath, E. J. Teaching arithmetic: are they ready for readiness? Academic Therapy, 1970-71, 6:2, 201-205.

Engelmann, S. Preventing failure in the primary grades. Chicago: Science Research Associates, 1969.

Fowler, M. Why did he miss that problem? Academic Therapy, 1978, 14:1, 23-33.

Frostig, M. & Maslow, P. Learning problems in the classroom. New York: Grune & Stratton Co. Inc., 1973.

Golick, M. Deal me in. New York: Jeffrey Norton Pub., 1973, available from Quebec A.C.L.D., 4820 Van Horne Ave., Montreal, Quebec, H3W 1J3.

Helms, H. B. An auditory approach to learning number facts. Academic Therapy, 1970-71, 6:2, 217-218.

Horowitz, R. D. Teaching mathematics to students with learning disabilities. Academic Therapy, 1970, 6:1, 17-35.

Johnson D. & Myklebust, H. Learning disabilities: educational principles and practices. New York: Grune & Stratton Inc., 1967.

Kendall, C. M. & Mirich, G. A. How to teach the fundamental subjects. Boston: Houghton-Mifflin Co., 1915.

Kose, L. Developmental dyscalculia. Journal of Learning Disabilities, 1974, 7:3, 164-177.

Lerner, J. Children with learning disabilities: theories, diagnosis, teaching strategies. 2nd. edition. Boston: Houghton-Mifflin Co., 1976.

Logue, G. Learning disabilities and math inadequacy. Academic Therapy, 1977, 12:3, 309-319.

McLeod, T. M. & Crump, W. D. The relationship of visuospatial skills and verbal ability to learning mathematics. Journal of Learning Disabilities, 1978, 11:4, 237-246.

Nall, A. Teaching arithmetic by developing related areas. Academic Therapy, 1970, 6:1, 41-46.

Otto, W., McMenemy, R. & Smith, R. Corrective and remedial teaching. Boston: Houghton-Mifflin Co., 1973.

Rappaport, D. The new math and its aftermath. Education Digest. January 1977, 6-9.

Schonell, F. & Schonell, F. E. Diagnosis and remedial teaching in arithmetic. Edinburgh: Oliver & Boyd, 1965.

Sternberg, L. & Mauser, A. J. The L.D. child and mathematics. Academic Therapy, 1975, 10:4, 481-488.

Thornton, C. A. & Reuille, R. The classroom teacher, the L.D. child and math. Academic Therapy, 1978, 14:1, 15-21.

Wahl, J. Wrong or reversed? Academic Therapy, 1970, 6:1, 51-52.

Wood, M. H. Destructive practices in teaching math. Academic Therapy, 1974-75, 10:2, 249-251.

Wood, M. H. Modern math and the L.D. child. Academic Therapy, 1980, 15:3, 279-290.

APPENDIX I

GUIDELINES FOR IDENTIFYING THE LEARNING DISABLED CHILD

A. Kindergarten Interview

B. Identifying LD Kindergarten Children

C. General Indicators

D. Assessing Readiness

E. Perceptual Problems

F. The Rhode Island Pupil Identification Scale

APPENDIX IA

KINDERGARTEN INTERVIEW

Questions a teacher can ask a child beginning kindergarten or first grade to gain information about the child's level of development.

1. How old are you?	about 80% of 5 year olds give correct age about 90-98% of 6 year olds give correct age
2. When is your birthday?	30 to 40% of 5 year olds know the month 50 to 60% of 6 year olds know the month 74 to 78% of 7 year olds know the month and date
3. Did you have a birthday party?	most 5 year olds can report on their birthday
What was the favourite thing you did? What was your favourite present? Who gave it to you?	6 year olds give a detailed report of their birthday party
4. How many brothers and sisters do you have	5 year olds can name the members of their family including themselves 78-96% of 6 year olds report accurately on their family as to name and ages
5. What does your Daddy do?	5 year olds generally repond with "He works" 6 year olds generally indicate the type of work "He builds houses." Often he can indicate the profession.
6. Can you print some letters?	most 5 year olds can print some letters or can copy them (Note how they approach the task, how they hold their pencil.)

- prepared by Margaret R. Hill

7. Can you print your name?	36 to 44% of 5 year olds can print their first name 70 to 74% of 6 year olds can print their first and last names 98% of 7 year olds can print their first and last names
8. Can you copy these pictures?	5 year olds should be able to copy a triangle or a square
9. Can you write some numbers?	40 to 60% of 5 year olds can write numbers from 1 - 5 75 to 80% of 6 year olds can write numbers from 1 - 10

Handedness - There is a great deal of confusion about the right hand between the ages of 4 and 7. At age 7, 68 to 82% of children know their right hand.

Reversals - To reverse letters or numbers is common at 5, 5½ and 6 years of age. Even at 7 years of age 12% of children have been found to make reversals.

Reference

Ilg, F. Ames, L.B. School Readiness, New York: Harper and Row, 1965.

APPENDIX IB

Identifying LD Kindergarten Children

Joann Mullen

A list of specific behavioral observations has been compiled to aid the kindergarten teacher in identifying children with learning difficulties. With this information available to them, teachers might be better able to identify the students not performing the classroom work expected of them. The children identified on the basis of the guidelines as having a learning disability could be referred to the school psychologist for further diagnosis. After the psychological evaluation, program planning, individual tutoring, and/or a prescriptive plan could be implemented to benefit children with learning difficulties. The recommended observations that should be utilized by the kindergarten teachers are listed below.

Visual-Motor Factors

- Tie shoe laces.
- Dress independently for outdoor play and home.
- Be able to color and trace between the lines.
- Be able to catch and throw a ball.
- Hop on one foot.

Academic Factors

- Print name in upper and lower case letters (for example, *Sally*).
- Be able to identify letters in name.
- Be able to identify the majority of the letters of the alphabet.
- Recognize colors.
- Identify numbers 0 through 9.
- Know telephone number and address.
- Be aware of left-to-right progression.
- Recognize simple shapes (circle, square, triangle).

Behavioral Factors

- Be able to follow short, simple directions.
- Work independently on a short task.

- reproduced from Academic Therapy, Volume XI, No. I, Fall, 1975 with permission of the author, Joann Mullen.

APPENDIX IC

GENERAL INDICATORS

1. Preschool

   A. Birth

   Anoxia ('blue baby')

   Excessively prolonged labour

   Unusually difficult delivery

   (esp. after prior easy delivery)

   Low Birth Weight

   Prematurity

   Adoption

   Blood incompatibility

   B. Developmental History

   Late sitting up

   Late, abnormal or skipped crawling

   Late walking

   Prolonged tip-toe walking

   Late or abnormal speech

   Hyperactivity

   Hypoactivity

   Strabismus (cross-eyed walleyed)

- taken from the article, "Recognizing Learning Disabilities", Commuinque, a publication of the Ontario Association for Children with Learning Disabilities. Volume7, No. I, Winter, 1978.

C. General

Family history of; learning disabilities, diabetes, mental illness, alcoholism

Periods of convulsions

2. School Age

A. General

Hyperactivity

Short attention span

Confusion about directions in space or time

Inability to follow series of spoken directions

Unusual craving for sweets

Low Blood Sugar

Ambidexterity (after 8 years)

Reversals of letters, words

Persistent spelling errors

B. Eye/Hand/Foot Coordination

Difficulty catching and/or kicking a ball

Inability to skip rope

C. Fine-Motor Coordination

Difficulty with buttoning

Difficulty tying shoes

Cramped pencil grasp

Poor handwriting

D. Gross Motor Coordination

Disturbances in gait

Inability to crawl or skip

Excessive clumsiness

Frequent falling

E. Balance

Hesitation in walking downstairs

Difficulty standing on one foot

Difficulty learning to ride a bike or walk a rail

F. Vision

Severe head tilt

Symptoms of visual stress:

squinting, blinking, eye rubbing, watering eyes,

skipping lines and/or words while reading,

head too close to paper (when writing, drawing, etc.)

G. Emotional and Behavioral Factors

Poor self-image

Hostility

Anger

Low frustration level

Tendency to temper tantrums

Excessive impulsivity

Withdrawn or disoriented behavior

H. Social

Gravitation towards younger playmate

Difficulty in establishing peer relationships

Avoidance of unfamiliar social situations

"If you notice a number of these indicators, regard them as warning signals and refer the child to a professional for diagnostic assessment."

"If some of the indicators are evident in the development of a child, do not conclude that he or she will necessarily have a learning disability. Many children who display these symptoms do not indicate learning disabilities. A great deal depends on the combination of factors and the severity of the conditions."

APPENDIX ID

Assessing Readiness

Although children need a certain level of visual-motor competence in order to learn, there is no certain connection between reading facility and scores on visual perception or reading readiness tests. Training in visual perception or readiness does not guarantee improvement in reading performance. In fact, the time is better spent on language experiences and direct reading at the appropriate level. Reading readiness tests are no more accurate in predicting the child's response to reading than are teachers' assessments of the kind outlined below, based on observation of the child's performance and interest.

Is the child ready to read? Here are samples of questions the teacher can ask; there are many others.

- Does the child see normally at reading distance? (Many children are still *long-sighted* when they enter school.)
- Which eye and hand does he or she prefer to use?
- Has he or she a clear sense of left and right?
- Does he or she hear speech sounds and respond appropriately?
- Can he or she attend to a task?
- Is he or she reasonably independent of the teacher?
- Does he or she respond to being read to?
- Does he or she choose a book to leaf through?
- Does he or she look at pictures, understand them, and distinguish between figure and background?
- Does he or she have some sense of the sequence shown in pictures?
- Does he or she show interest and competence in sorting and matching 3D objects and shapes, 2D shapes, letters, and numbers?
- Does he or she recognize a number of familiar printed and graphic symbols?
- Can he or she distinguish different voices, intonations, and particular speech sounds?
- Can he or she distinguish sounds and words that rhyme?
- Can he or she distinguish and match words with similar beginnings or endings?
- Does he or she show a range of oral vocabulary?
- Can he or she get meaning from a familiar caption or act on a simple instruction displayed in the classroom?
- Can he or she point out words as separate, regardless of knowing their meaning?

Ontario Ministry of Education Education in the Primary and Junior Division 1975, p. 45.

APPENDIX IE

PERCEPTUAL PROBLEMS

General problem areas are listed, followed by some of the ways these may manifest themselves in classroom performance and achievement.

a. Difficulty organizing and giving meaning in visual perceptions.

1. Poor visual discimination - seen in letter word or shape discrimination.
2. Persistent letter reversals, of letters themselves or of letters within words.
3. Difficulty in learning words by sight method.
4. Difficulty in discriminating geometric shapes by sight comparison.
5. Attendance to detail without relating it to whole context (child's "picture reading", his observation and reporting of experiments, class projects, etc.)

b. Memory

1. Poor or spotty in some areas of normal classroom instruction e.g., learns letters, words, spelling lists one day, doesn't know them the next day.
2. Efficient memory of personal, meaningful experiences (but often related in a concrete, detailed, and descriptive manner - rather than an interpretive manner)
3. Retention least obtained with rote method.

- taken from the article, "Recognizing Learning Disabilities", Communique, a publication of the Ontario Association of Children with Learning Disabilities, Volume 7, No. I, Winter, 1978.

c. Difficulty organizing material and developing manner of approaching and completing assignments.

1. Sometimes no evidence of "transfer of learning" - does first math problem on page, approaches another similar one that is presented in a different manner as though an entirely new situation without recognition of similarities.
2. Needs direction at each different step or assignment when material is not thoroughly understood or learned.
3. When insight is absent, tendency is either to:
    (a) Perseverate - continue in the same pattern of responding beyond the point of its effectiveness or appropriateness: not reorient himself to new elements or demands of problems.
    (b) Become "disorganized" in his approach: any answer will do, responses and approach appear random.
4. Has difficulty shifting from one kind of activity, doesn't want to leave an activity until finished.

d. Distractibility, attention span, motor activity.

1. Tends to be easily distracted.
2. In some, but not necessarily all areas of performance, attention span is less than expected for the chronological age.
3. More or less than the average amount of motor activity and responsiveness.

4. Motor behavior may appear as "restless," "aimless wandering," "lethargic or impulsive."

e. Visual-Motor Coordination

1. Handwriting may indicate poor coordination, e.g., jerky, immature, labored, etc.
2. Handwriting may indicate poor spatial orientation - difficulty in adhering to lines, poor planning or use of space on the page.
3. Drawings - poor spatial orientation, some difficulty in making certain shapes (even if copying them).
4. Especially difficulty drawing the human figure, tends to be very immature and frequently distortions of body-image.

f. Inconsistency and Unevennes of Functioning

1. Indicates seeming knowledge of material one day, no sense of it the next.
2. Variability in responsiveness to teacher help.
3. Doing average or better work in day, indicates little of "take hold" another day.
4. Unable to recall at grade level but not able to organize or accomplish language skill work.
5. Seems to be "learning nothing" or is behind in formal class work but indicates alertness and assimilation of material through class discussion or independent projects, etc.

APPENDIX IF

Rhode Island Pupil Identification Scale

H. Novack/E. Bonaventura/P. Merenda

Observation period: from ____________________ to ____________________

Observer ____

Name ______________________________ Age ________ years ________ months

Sex ____________________ Grade ____________________

School ____

City ____________________ State ____________________

Instructions: For each item on this form, rate the pupil being evaluated according to the following scale:

1 = never 2 = rarely 3 = occasionally 4 = frequently 5 = always

If during any observation period no opportunity has arisen for the task to be performed, leave the item blank.

Part I refers to behavior which can normally be observed in the classroom. Part II deals with behavior which is most readily observable through written work.

Part I

____ a. Has difficulty cutting.
____ b. Has difficulty pasting.
____ c. Bumps into objects.
____ d. Trips over self.
____ e. Has difficulty catching a ball.
____ f. Has difficulty jumping rope.
____ g. Has difficulty tying shoes.
____ h. Has difficulty buttoning buttons.
____ i. Breaks point of pencil.
____ j. Has difficulty sitting still.
____ k. Has difficulty standing still.
____ l. Has short attention span.
____ m. Gives the appearance of being tense.
____ n. Has difficulty remembering what is seen.
____ o. Has difficulty remembering what is shown.
____ p. Cries.
____ q. Fails to take reprimands well.
____ r. Has difficulty understanding directions.
____ s. Tends to be discouraged.
____ t. Tends to give up.
____ u. Tends to avoid group activity.
____ v. Has difficulty completing assignment in allotted time.

____ PART I SCORE

Part II

For items with an asterisk (*) indicate item and describe the error on the back of the page. Record any additional errors not indicated on check sheet.

____ a. Has difficulty staying within lines when coloring.
____ b. Produces work which varies in quality.
____ c. Demonstrates poor handwriting on papers.
____ d. Erases on papers.
____ e. Turns in papers which are dirty.
____ f. Has difficulty writing within lines.
____ g. Starts writing in the middle of the paper rather than from the left margin.
____ h. Mirrors and/or reverses letters, numbers, words, or other forms in copying.*
____ i. Mirrors and/or reverses letters, numbers, words, or other forms when visual stimulation is not provided.*
____ j. Runs words or parts of words together in copying.*
____ k. Runs words or parts of words together when visual stimulation is not provided.*
____ l. Omits or substitutes letters, words, and/or numbers in copying.*
____ m. Has difficulty with the names of letters and/or numbers.*
____ n. Omits or substitutes letters, words, and/or numbers when no visual stimulation is provided.*
____ o. Has difficulty completing written work in the time allotted.
____ p. Has difficulty grasping number concepts.
____ q. Has difficulty arranging numbers vertically.
____ r. Has difficulty with addition and subtraction.
____ s. Makes omissions, substitutions, or reversals of letters, numbers, and/or words in reading.*

____ PART II SCORE

____ TOTAL SCORE FOR PARTS I & II

- reproduced with permission of the author, H. Novack.

A summary of some of the typical findings is presented in Table 1. Mean scale scores for pupils in group 1 (no problems) and group 2 (some problems) are considerably lower than those for pupils in group 3 (substantial problems) and group 4 (not promoted). The overall tests of the mean differences resulted in statistical significance well beyond the .001 level ($F_{3,158}$ = 46.82 for kindergarten classes; $F_{3,260}$ = 46.82 for kindergarten classes; $F_{3,260}$ = 43.53 for first grade classes; and $F_{3,275}$ = 32.69 for second grade classes). These data attest to the validity of the RIPIS in identifying learning problems and in predicting academic performance of pupils in kindergarten through grade 2.

TABLE 1

Mean Scale Scores in June by Performance Group

	Performance Group[1]			
Grades	1	2	3	4
Kindergarten	57.54(81)	73.93(45)	90.09(22)	87.43(14)
Grade 1	67.85(124)	84.87(78)	99.88(41)	101.00(21)
Grade 2	63.39(122)	78.64(108)	95.70(39)	81.10(10)

[1] The Performance group categories are the following:

1. Promoted and will experience little or not difficulty.
2. Promoted and will experience some difficulty.
3. Promoted and will experience considerable difficulty.
4. Not promoted.

NOTE: Numbers in parentheses are the independent observations upon which mean is based.

Similar results were obtained with the application of the scale in October (see Table 2).

TABLE 2

Mean Scale Scores in October by Performance Group

	Performance Group[1]			
Grades	1	2	3	4
Kindergarten	61.89(84)	74.96(46)	90.09(22)	82.17(18)
Grade 1	69.69(124)	85.56(78)	94.10(41)	98.84(19)
Grade 2	66.91(122)	86.62(108)	101.69(39)	98.10(10)

[1] For a breakdown of the performance group categories see footnote 1 of of Table 1.

NOTE: Numbers in parentheses are the independent observations upon which mean is based.

Use of the Rhode Island Pupil Identification Scale helps the teacher recognize when a pupil has certain distinctive problems in specific areas of functioning that prohibit him from performing to the teachers expectations. The scale appears to meet the teachers need for a reporting device which would permit him to observe systematically and indicate behaviour considered significant in the presence of various learning activities.

APPENDIX II

INFORMAL EVALUATION

A. Informal Assessment Techniques with LD Children

B. Informal Diagnostic Procedures:
"What can I do Before the Psychometrist Arrives?"

APPENDIX IIA

INFORMAL ASSESSMENT TECHNIQUES WITH LD CHILDREN

Perhaps the one irrefutable characteristic attributed to children with learning disabilities is their wide variability of behavior. Mere classification and/or testing does not necessarily prescribe treatment, complete diagnosis, or assessment of these children. Diagnostic procedures are still, at best, somewhat spotty. Knowledge of IQ, reading grade level, or neurological status, while interesting and useful, does not provide enough information with which either to establish appropriate goals or to construct a reality-based training program for a specific child.[1] Therefore, the implementation in the schools of an effective, educationally oriented evaluation program is of the utmost importance for a successful instructional experience with learning-disabled children.

All activities that contribute information and data to the teacher's knowledge of the child and his problem constitute the total evaluation process. It is this information that is synthesized and used to formulate an appropriate instructional intervention for a

---

- included with permission of the author, Hubert Bonney Vance.
  Hubert Bonney Vance, Ph.D., is director of the Child Study Center, Madison College, Harrisonburg, Virginia 22801.

particular child. According to D. Hammill, the elements of the total evaluation falls into two divisions: the formal evaluation and the use of informal diagnostic techniques (informal evaluation).[2] It is highly unlikely that a single individual will possess the necessary skills or time to manage the total evaluation. Unfortunately, in actual school practice, even where the team approach is used, the total evaluation rarely reflects an educationally relevant focus and often is accomplished for the sole purpose of labeling, placing, or referring youngsters who fail in school.

Teachers of learning-disabled children must assume responsibility for a considerable portion of the total diagnostic effort. This does not mean administering IQ tests or other batteries of formal tests. This does mean that the teachers of learning-disabled children must participate meaningfully in the evaluation process. If assessment results are to be used meaningfully in educational programming, then we must recognize that instruction and evaluation are not separate words. Successful teaching is a reflection of a series of effective teacher assessments.

The teacher of learning-disabled children who works in the schools must recognize that in many cases the educational evaluation will be left to him alone. These informal techniques can be used to verify the findings of formal assessment and at the same time be substituted for more formalized test results.

The teacher has a unique opportunity and responsibility for observing the child while he is engaged in learning tasks; hence, she must be prepared to collect data systematically and categorize, store, utilize, and evaluate the information. With the teacher assuming a major responsibility in the assessment procedure, the noticeable gap between the diagnostic process and the prescription process for remediation could be eliminated in most instances. This is accomplished through an ongoing process of teaching the child and analyzing his responses to various instructional tasks. Evaluation then becomes an ongoing teaching procedure, one in which the teacher has the responsible role.

These specific task-oriented tests provide additional evaluative teaching data, many times exceeding the value of information obtained through more formalized testing procedures.[3] Teacher-made evaluative instruments are informal and designed to assess one particular skill (e.g., knowledge of a certain kind, knowledge of specific letter sounds, etc.). Instruments that are included at this level of evaluation include seat work exercises emphasizing one specific task, orally administered exercises, informal teaching lessons assessing various skills, and individually administered written assignments. Below is a partial list of specific informal tests that may be used in different curriculum areas.

Visual-Motor Problems

According to G. Wallace and J. Kauffman, competence in visual motor perception is dependent upon the ability to discriminate the constancy of form, perceive objects in foreground and background and to meaningfully separate them, perceive different parts of an object in relation to the observer, and coordinate vision with movements of the body.[4] Especially, the considerations listed can be helpful as procedures to evaluate particular visual-motor perception problems. Many training activities mentioned throughout the literature are suitable assessment tasks.

1. Observe how the child holds his pencil. How well does he copy and trace?
2. Can he move about the room without bumping into or tripping over objects?
3. Have him walk a straight line forwards, backwards, or on his tiptoes.
4. Observe his hopping, leaping, or skipping.
5. Use "Simon Says" or "Jumping Jacks" to observe certain movement skills.
6. Have the child bounce a ball, hop on one foot, or walk a balance beam.
7. Prepare an obstacle course within the classroom and have the child move through the course in many different positions.

8. Observe the child storing beads or stringing beads, according to color, size, or patterns.

9. Ask the child to make patterns by having him fold paper - move to direct observation to folding patterns from memory.

10. Observe how children snap or fasten, open locks, buckle, tie or untie shoes and laces.

11. Have children toss bean bags to particular shapes; such as, through square holes, round holes, and small holes.

12. Have children copy various designs from the chalkboard.

13. Observe children playing checkers, dominoes, darts or marbles for hand-eye coordination.

14. Direct children to use tongs or tweezers to pick up a series of objects (beads, ect.) and place them in a small-necked container.

Specific Reading Problems

Difficulties in learning to read have been recognized as the most important single cause of school failure. Many children who encounter reading difficulties experience academic problems in other areas of the curriculum. One of the most important steps in informal assessment of reading problems is observing the child reading both orally and silently as well as providing the best possible basis for diagnostic teaching.[5] The analysis of errors on informal measures provides the teacher with pertinent diagnostic information that may be directly utilized in an instructional program. Listed below are suggestions which the teacher may use in detecting specific reading problems.

1. Have the child match capital and lower-case letters: Aa, Mm, Pp, Bb, etc.

2. Present the child with a sight vocabulary list to determine how extensive his sight vocabulary is.

3. Be aware if the child is making consistent work analysis errors.

4. Letter recognition: Say, "Look at the row of letters that begin with a __________ Circle the letter."

d b p c z e g...

f j l s t z...

5. Have the child write the alphabet in capital letters (manuscript or cursive),

6. Have the child write alphabet in lower-case (small) letters (manuscript or cursive).

7. Substitute sounds: Say, "Point to the word ball. Say it. Now look below the word ball; you see parts of words that end like ball. Put a letter in the first blank to make the word fall."

ball	pig	tip
____ all (f)	____ ig (d)	____ ip (z)

____ all (t)	____ ig (b)	____ ip (l)
____ all (w)	____ ig (r)	____ ip (h)

8. Context clues: Say, "Read the first sentence. The missing word begins with w."

I like to w______ in the rain.

The food was too h______.

I l______ oranges.

Her doll is red and b______.

9. Consonant discrimination: Say, "Listen for the consonant you hear in the middle of these words. Write the letter on the list."

butter ______

before ______

lessons ______

10. Beginning consonant discrimination: Say, "Sometimes two letters blend to make a sound. Look at the first row of words. Circle the word that begins like thing."

thumb	with	stop	(thing)
wish	shine	slime	(shoe)
blue	show	stub	(black)
fish	fly	shed	(flag)

11. Ending blends: Say, "Look at the first row of words. Circle the word that ends like perch."

much	fish	choose	(perch)
three	bath	shoe	(with)
ship	chip	swish	(fish)
sent	tree	send	(mint)

12. Substituted blends: Say, "Look at the word trap. Say it. Now look below trap. You see parts of words that end like trap. Put a letter in the blank to make the word."[6]

trap	clip	wing
____ap (ch)	____ip (sh)	____ng (thi)
____ap (str)	____ip (fl)	____ng (swi)
____ap (scr)	____ip (str)	____ng (spr)

13. Vowels: Say, "Listen to this word. Write on the line the vowel you hear."

smoke ________

risk ________

use ________

sleeve ________

14. Vowels: Say, "Circle the vowels you hear."

chime

seat

tire

15. Root words: Say, "Circle the root word in each of these words."

looking

longest

return

remodel

16. Prefixes and suffixes: Say, "Circle the prefix and suffix of each word below."

export

disobey

replace

happiness

17. Syllables: Say, "Write the number of syllables each word has on the line beside the word."

reload ________ belong ________

passenger _______ away ________

An analysis of various observed reading skills will often be of help in assessing reading problems. Careful observation of the child may provide answers to the following questions:

1. Does he read too fast, too slow, or word by word?

2. What word analysis skills does the child utilize?

3. What "consistent" word analysis errors are made by the child?

4. Are particular words or parts of words consistently distorted or omitted?

Written Language Problems

Written language is one of the most highly sophisticated high forms of language and essentially the last area of language learned. It is usually preceded by the development of skills in listening, speaking, and reading. Direct observation of written language skills will provide the teacher with exacting data in knowing precisely what a child can and cannot do in this area. G. Wallace and J. Kauffman contend that teachers should be particularly observant of the following: (1) consistent difficulty in copying or revisualizing specific letters; (2) patterns of linguistic errors in the spelling of specific words; (3) pencil grasp and body posture problems; and (4) difficulties with writing form, either manuscript or cursive.[7] Following are a number of teacher suggestions which can be used in assessing written language problems.

1. Put two dots on the blackboard. Does he connect them from left to right?
2. When given paper and pencil, does he begin at the left side of the page?
3. Observe the child to see if he closes letters or has difficulty with crossing, making letters too small, or omitting parts of letter.
4. Determine if the position of the child's hand, arm, body, or paper is correct.

5. Have the child print a series of letters or words to determine:

- o Quality of pencil control: kinky, varying?
- o Slant of writing: irregular, too many slants, not vertical or too slanting?
- o Form of letters: poor circles, places illegible, poor straight slopes, or disconnected letters?
- o Spacing within letters, between letters, words, too wide, crowded, poorly arranged on paper and uneven?
- o Alingment of letters: off the line in places, uneven in height, capital and loop letters uneven?
- o Form of letters: letters too round or thin, beginning and ending strokes poorly made, and strokes not uniform (down)?

Oral Language Problems

The close relationship between language and learning has been recognized by many as extremely important. Children with oral language problems are handicapped in understanding and using the spoken word. Deficits in oral language can be very complicated in nature. There are usually three basic aspects of language acquisition and difficulties which the teacher should be concerned with. There are (1) inner language disorders which prevent the child from acquiring basic language skills; (2) receptive language problems which interfere with the child's ability to comprehend the spoken word; and (3) expressive language difficulties which preclude the development of adequate spoken language. The extensive research and study investigating language problems is not yet reflected in the instruments presently available to assess spoken language deficits. J. Brodie contends there are no available tests which adequately measure all aspects of language ability.[8] Consequently many professionals often rely on informal measures. Diagnostic questions and suggestions which can be used in informal assessment of language difficulties are given below.

Inner Language

Many people who work with language tend to agree that inner language disturbances are probably the most debilitating of all language disorders. Inner language can be defined as the language which one uses to communicate with oneself or the language with which one thinks.[9] Children with difficulties in this area are unable to attach meaning to specific words. Part of the difficulty seems to result from the child's inability to transform any experience with the word or concept into verbal symbols. According to Wallace and Kauffman, inner language development is dependent upon the child's ability to:

1. Establish verbal imagery for sounds, words, concepts, etc.
2. Use the complex maze of skills needed in a logical thinking process.

Some of the following questions and methods may be of help in discovering inner language difficulties:

1. Have the child verbally define such words as train, car, truck, doll, house, etc.

2. Determine if the child can attach labels to familiar objects, etc.; flagpole, doors, windows.

3. Read a series of simple analogies to the child and have him complete each sentence.

4. After reading a story, ask the child specific questions which require interpretation and imagination.[10]

Receptive Language Difficulties:

Auditory receptive language is the ability to understand spoken language of others. Children with deficits in this area usually hear what is said but are unable to comprehend the meaning of it. Typically children with receptive difficulties will have problems associating names with objects, be unable to name objects, have poor recall of names, and have some difficulty in interpreting environmental language.[11] Diagnostic questions and activities for detecting receptive language problems are listed below.

1. Present various isolated speech sounds to a child and ask him to listen for a specific sound such as /k/.

2. Can the child discriminate among various speech sounds.? Ask the child to point to certain objects (in a picture) that

begins with the same sounds as a stimulus you provided for him.

3. Can the child classify words into categories such as people, food, and animals?

4. Give the child simple directions to see if he can follow them.

5. Can the child match an object to another object which is basically different in form and physical features but belongs to a similary category?

6. Have the child respond "yes" or "no" to the following questions:[12]

"Do flowers grow?"
"Do dogs bark?"
"Do rabbits hop?"

You also can use true-and-false statements.

7. Have the child select words in a sentence that does not make sense; for example, "It snows during the summer."

8. Determine if a child can follow specific directions after hearing a sentence; for example, "Mother bought some apples at the store. Circle what mother bought at the store."

Auditive Expressed Language

Expressive language can be viewed as the spoken language the child uses in communicating with others. Children with disturbances in this area typically hear what is said to them. The major difficulty these children experience is in using language for communicating with others. The most common type of auditory expressive language problems are expressing speech sounds, formulating words and sentences, and retrieval of certain words for spontaneous usage.[13] The majority of these children are often seen by a speech clinician for remediation rather than a teacher. Activities which might provide the teacher with clues in determining if a child is experiencing expressive language problems are listed below.

Observation of oral language skills will often provide insightful information in regard to expressive language problems. A child might attempt to communicate by gestures only. Delayed responses might also serve as a clue.

1. Can the child isolate sounds such as /p/, /k/, /d/, /n/, /t/, and /l/?
2. Determine the child's sight vocabulary by having him name such objects as fruit, tags, etc.
3. Have the child describe certain activities, such as skipping and jumping.
4. Can the child describe the use of simple tools and kitchen utensils?
5. Prepare a series of sentences with key words missing. Read the sentence and ask him to supply the key word; for example;

"A bird ______."

"A dog _______."

"We have _______ ears."

The careful observation of children in various speaking and nonspeaking situations would be both advisable and helpful. Further informal techniques which can be used for assessing language problems can be found in the words of Nancy Wood.[14]

Arithmetic Problems

Many specific arithmetic deficits may be identified by regular classroom teachers. Three everyday classroom procedures which are suited to informal diagnosis are examinations of written assignments, as answer to oral questions and board work. Written seatwork activities often serve as informal tests. W. Otto and R.A. McMenemy indicate that most problems in arithmetic are due to deficiencies in basic computational skills.[15] According to G. Wallace and J.A. McLoughlin, adequate computational and conceptual skills which are fundamental to successful arithmetic achievement include: (1) an understanding of place value; (2) the ability to add, subtract, multiply and divide; (3) an understanding of fractions; (4) the ability to tell time; and (5) a knowledge of monetary values.[16] Diagnostic questions and informal assessment techniques which may be helpful in detecting arithmetic problems are listed below:

1. Seat work activities can serve as a series of informal tests.
2. Ask the child to describe aloud the various procedures

involved in solving a particular arithmetic operation.

3. Interviewing the child often can reveal misunderstanding of basic arithmetic concepts or procedures.

Figure 1

Example of an informal teacher-made math-skills test

____
Name

1. Copy these numerals

1 2 3 4 5 6 7 8 9 10 ______________________________

2. Count these dots. Put answer in box.

• • • • • • • • • • ☐

3. Circle the number

4	2
XXX	XXX
XXX	X
	XXX

4. What number comes after

3 __ 6 __ 11 __ 9 __ 13 __

5. What number comes before

__ 2 __ 9 __ 6 __ 4 __ 8 __ 10

6. Write the numerals from 1 through 15.

7. What numeral comes between

4 __ 6 7 __ 9 1 __ 3 10 __ 12

8. Circle the numeral that means more.

8 or 6   11 or 14   52 or 25

9. Work as many additions and subtractions as you can.

$$\begin{array}{r} 2 \\ +3 \\ \hline \end{array} \quad \begin{array}{r} 1 \\ +2 \\ \hline \end{array} \quad \begin{array}{r} 0 \\ +4 \\ \hline \end{array}$$

3 + 4 = ___

7 + 0 = ___

10. 6 + ___ = 10   5 ☐ 3 = 8   ___ - 2 = 2   9 ☐ 4 = 5

11.

$$\begin{array}{r} 4 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -7 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -0 \\ \hline \end{array}$$

9 - 6 = ___   ___ - 2 = 2

12.

$$\begin{array}{r} 6 \\ 0 \\ +9 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ 32 \\ +16 \\ \hline \end{array} \quad \begin{array}{r} 45 \\ -15 \\ \hline \end{array} \quad \begin{array}{r} 674 \\ -32 \\ \hline \end{array} \quad \begin{array}{r} \$7.31 \\ -\ .19 \\ \hline \end{array}$$

13. **Rename:** 175 = _______hundreds_____tens_______ones

250 = 200 + _______ + 0

14. Complete the following:

12 inches = ____ feet

36 inches = ____ feet or yard

_______ounces = 1 pound

_______pounds = 1 ton

_______pennies= 1 dimes (10 cents)

_______nickels= 1 quarter (25 cents)

5 dimes = ____cents

4 quarters = ____dollar

15. Multiplications and divisions

3 x 8 = ____   2 x 3 = ____ $3\overline{)9}$

6 x ____ = 24   7 x ____ = 14 $2\overline{)10}$

0 x 7 = ____   12 - ____ = 1   ____ - 0 = 0

6 x 1 = ____   9 - 1 = ____   0 x 5 = ____

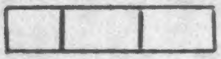
$$\begin{array}{r} 23 \\ \text{x}2 \\ \hline \end{array} \quad \begin{array}{r} 432 \\ \text{x } 3 \\ \hline \end{array}$$

$5\overline{)75}$ $2\overline{)48}$

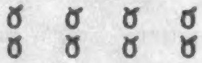
$3\overline{)603}$ $5\overline{)375}$

16. Fractions

Shade 1/3 of this rectangle



Circle 1/2 of the apples



17. Equivalent fractions

1/2 = ____ /4 2/3 = ____ /9 3/____ = 9/12

18. Reducing fractions

7/21 = _____ 12/30 = _____ 4/8 = _____ 4/6 = _____

19. Adding and subtracting fractions

3/8 + 1/8 = _____ 4/10 + 3/10 = _____

9/17 - 8/11 = _____ 1/4 - 1/10 = _____

Conclusion

Many skill deficiencies can be individually assessed through various informal teacher-made tests. The teacher will then be more aware of the exact difficulties being experienced by the child. These teacher-made and teacher-administered informal tests provide the teacher with exact information that can be used in planning for the specific needs of an individual student. Added advantages of informal tests are usually teacher-made, inexpensive, flexible, rapidly administered, and relatively easy to construct.[17] Informal tests combine the diagnostic values of observation with content that is closely geared to instruction. The purpose of the informal examination is not to label a child, but to prepare an instructional program for the pupil based upon his performance and needs. Informal assessment techniques should, however, be considered as only one part of the total assessment procedure, but a very important part.

NOTES

1. D.D. Hammill, "Evaluating Children for Instructional Purposes," Academic Therapy 4:4 (1971): 341-353.
2. Ibid.
3. Ibid.
4. G. Wallace and J. Kauffman, Teaching Children with Learning Problems (Columbus, Ohio: Charles E. Merrill, 1969).
5. R. Strang, Diagnostic Teaching of Reading (2nd ed.) (New York: McGraw-Hill, 1969)
6. J. Owen, "Open Education" (Carroll T. Overton School, Salisburg, North Carolina, n.d.).
7. Wallace and Kauffman, op. cit.
8. J. Brodie, "Language Tests and Linguistically Different Learners: The Sad State of Art," Elementary English 47 (1970): 814-829.
9. D. J. Johnson and H.R. Myklebust, Learning Disabilities: Educational Principles and Practices (New York: Grune & Stratton, 1967).
10. Wallace and Kauffman, op. cit.

11. M. McGinnis, *Aphasic Children: Identification and Education by the Association Method* (Washington, D.C.: Volts, 1963).
12. W.J. Bush and M.T. Giles, *Aids to Psycholinguistic Teaching* (Columbus, Ohio: Charles E. Merrill, 1975).
13. G. Wallace and J.A. McLoughlin, *Learning Disabilities: Concepts and Characteristics* (Columbus, Ohio: Charles E. Merrill, 1975).
14. N. Wood, *Verbal Learning* (Belmont, California: Fearon, 1969).
15. W. Otto and R. A. McMenemy, "Corrective and Remedial Teaching" (Boston: Houghton Mifflin, 1966).
16. Wallace and McLoughlin, op. cit.
17. T. Stephens, "Directive Teaching of Children with Learning and Behavioral Disorders," (Columbus, Ohio: Charles E. Merril, 1970).

APPENDIX IIB

Informal Diagnostic Procedures: "What Can I Do Before the Psychometrist Arrives?"

Jennie J. DeGenaro, MS

This paper describes informal methods for assessing children suspected of having a learning disability. Diagnostic techniques are described and a simple record-keeping matrix is presented. Information gained from these activities provides significant referral data as well as information to assist the teacher in individualizing instruction in the classroom. Pupil strengths and weaknesses are determined without the use of formal instruments. Normative data are included as a guide to aid teacher expectations.

WHY INFORMAL ASSESSMENT?

In this age of educational specialization, many teachers assume they are not qualified to diagnose children who are suspected of having a learning disability. They feel they must wait for the psychometrist, or another specialist, who may not be immediately available. Meanwhile, valuable time is lost.

Although classroom teachers are often unskilled in formal assessment procedures, the continued rise in the number of children who can be identified as learning disabled makes the generalist an essential member of the diagnostic team. In situ assessments may be helpful.

Smith (1969, p. 10) states that "most university and college teacher-training programs do not provide opportunities for learning informal classroom evaluation." Suggested in this paper are easily learned, informal testing procedures for assessing each child's strengths and weaknesses.

Diagnostic information is essential in planning an individualized program for each child. Also, procedures are needed by the classroom teacher for identifying children who should be referred for more extensive (formal) evaluations. Further, informal assessments place the teacher in the professional position of accepting accountability for the pupils in his or her charge.

Often there is a question about the level of performance a teacher can reasonably expect from a given pupil. Group intelligence test scores for the majority of the children assigned to a teacher are generally available. Thus, rough estimates of each child's potential may be ascertained. Mental maturity tests, such as the California Test of Mental Maturity, may be administered if the above information is lacking. Lerner (1971) suggests three different formulas which can be used to quantify a learning disability. The simplest was provided by Harris (1961). The formula is: RE (reading expectancy grade) = MA (mental age) − 5.

In working with learning disabled children, however, the teacher must be extremely cautious in accepting student potential as measured by standardized instruments or informal assessments. Further, any test is only as good as the professional who uses it. An accurate assess-

---

- reproduced from the Journal of Learning Disabilities, Volume 8, No. 9, with permission of the author, Jennie J. DeGenaro.

letter. *Example:* A card containing letters "b, l, c" is displayed for three seconds. Remove the card from view and ask the child to name the letters in the same order as on the card.

To reach the level expected of a nine-year-old on the Detroit Tests of Learning Aptitude, a student must recall all letters presented up to and including five letters in the exact sequence. The child is given four chances to succeed, if needed, at each level.

The visual memory of children who cannot read letters may be assessed by using pictures or objects.

Paste pictures of common objects on cards. Make two sets for each series. Two pictures will appear on the first card, three on the second, four on the third, and so forth, up to ten. *Example:* individual pictures of a dog, cat, mouse, car.

Start the test by displaying a card containing two pictures. Use both sets of cards for each series. Increase the number of pictures per card until the child errs. Allow him to look at the cards for one second per picture. *Example:* Four pictures on a card are studied for four seconds. Remove the card from view. Ask the child to name the objects (pictures) on the card. Consider the response correct regardless of the order given.

To achieve at a seven-year plus level on the Detroit, a child is required to recall all of the items presented, using two sets of each series, through six objects.

(2) AUDITORY DISCRIMINATION AND MEMORY

To assess auditory discrimination and memory, the teacher works with each pupil individually in a room free from noise and distraction.

Auditory Discrimination. Compile a list of word pairs which are alike except for one phoneme. The phoneme that is different occurs at the beginning of some words, in the middle of some, and at the end in others. *Example: men-fen, bend-bond, lose-loose.* Words may be actual or nonsense. Occasionally include the same word twice. *Example: walk-walk.*

The teacher calls word pairs. The pupil indicates when the words are different by holding up a paper flag, or by giving some other agreed upon signal. The child faces away from the teacher.

As a normative guide, note that the Wepman Auditory Discrimination Test rates as unsatisfactory the performance of an eight-year-old who makes three errors out of a total of 30 items.

Auditory Memory (words). To test auditory memory, select one-syllable nouns. The same procedures are followed as for Visual Memory for Pictures (above).

Commence with two words. *Example:* The teacher says *dog-bird*. Two sets of words are prepared and presented for each series. The most difficult set includes eight words.

The Detroit has a similar subtest. The child is required, however, to remember more words presented auditorially than objects presented visually to achieve at the same proficiency level.

Auditory Memory (digits). Digits may be used to test a child's auditory memory. The teacher works with individual pupils and calls out a series of digits which the child is to repeat verbatim.

The teacher begins by calling two digits and increases the number called until the child can no longer recall them in the exact order given. *Example:* The teacher calls, "2 – 7," then "5 – 1 – 0," then "6 – 3 – 8 – 4."

According to the Stanford-Binet Intelligence Scale (1973) a seven-year-old is expected to recall five digits forward and three reversed.

(3) LETTER IDENTIFICATION

To determine which pupils do not know the letter names, the following procedure is used. Mimeograph a page of letters not written in alphabetical sequence. This task is accomplished individually. The child names the letters while the teacher records the exact error response above the letter attempted.

(4) WRITING THE ALPHABET SEQUENCE

To determine if the children can write the alphabet and the length of time required, instruct each to write the alphabet using small (lower case) letters. No copy is provided. When each child finishes, the teacher records the time required in minutes and seconds on his paper.

ment depends upon seeing the child in a total context. And any instructional program based on these tests must be carefully supervised and monitored, lest the child be misclassified and perhaps unjustly condemned. According to Kirk and Kirk (1971, p. 5), ". . . some children who appear mentally retarded in the classroom and on intelligence tests may be children with learning disabilities rather than children who are mentally retarded."

Various publications suggest remedial exercises which help to alleviate deficit areas uncovered on such tests as the Stanford Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities (see Ferinden et al. 1970). Deficits uncovered by informal assessments may also be remediated in a like manner. Children whose performances fall substantially above or below that expected will need personalized instruction. But these may well be the children who should be considered for referral for more in-depth evaluation, where intra-individual strengths and weaknesses can be more closely analyzed.

WHERE TO BEGIN

Information on each child can be obtained by the classroom teacher without the use of formal instruments. Thus, the teacher will have valuable diagnostic information on every child under her tutelage within a few days.

I shall now discuss informal methods for assessing the fourteen following areas:

(1) Visual discrimination and memory
(2) Auditory discrimination and memory
(3) Letter identification
(4) Writing the alphabet sequence
(5) Phonetic knowledge
(6) Tactual ability
(7) Reversals and rotations
(8) Verbal skills (oral)
(9) Copying at near and far points
(10) Reading levels
(11) Self-concept
(12) Eye-hand coordination and written language
(13) Following directions
(14) Gross motor skills

Testing should begin with the visual and auditory channels, inasmuch as these are the two major avenues for learning. The teacher proceeds until the level is reached where the child's skills "break down." Generally, the instructional program, both developmental and remedial, should begin slightly below the instructional level, thus enhancing the learner's chances for success.

(1) VISUAL DISCRIMINATION AND MEMORY

The teacher can assess the visual modality for discrimination and memory ability. Children suspected of physiological deficits should be referred through the proper channels.

Visual Discrimination. Assess visual-motor ability by displaying geometric forms for the child to reproduce. Present individually a circle, cross, square, triangle, and diamond. Request the child to copy the design. Before he commences, explain that he will have five designs to copy on the page. According to the Gesell Developmental Schedules, children are expected to copy a square at four and a half years, a triangle at five, and a diamond at six.

Visual discrimination is further assessed in a more academic (task-oriented) manner. An exercise such as the following is appropriate for the child with some reading ability: The teacher writes a short sentence of four or five words, and places the sentence at the top of the page. In succeeding "sentences," the words from the original sentence are scattered among similar words. Children are to underline only the words found in the sample sentence. *Example:* "Where was that black cab?" is written at the top of the page. The next sentence may be written as follows: "Where When saw was what that black back cat cab car?" Include six or eight examples with different, but similar words interspersed in the sentences.

A small group of children may be tested in this manner. The time required to complete the exercise and the number of words correctly marked determine response adequacy.

Visual Memory for Letters, Digits and Pictures (objects). To assess memory for letters, print from two to eight letters (not in alphabetical sequence) on each card. Make several sets of cards containing the same number of letters per card. Display the card for one second per

To test far-point copying, write 3-5 short sentences on a large chart. Place the chart in front of the group to be tested. Direct the children to copy the sentences on lined paper. Scoring involves accuracy of punctuation, capitalization, spelling, letter formation, organization on the page, and the time required to complete the task.

To test near-point copying, use short sentences as for far-point copying. Sentences are written at the top of the page and mimeographed to allow one page for each pupil.

Blank lines are provided below the sentences for the child to copy the material. Scoring is the same as for far-point copying. The teacher should compare the child's far- and near-point samples for an intra-individual measure.

Slingerland (1970) states that a seven-year-old who has received "one year of adequate instruction and practice" should be able to copy satisfactorily.

(10) READING LEVELS

A teacher should be aware of the reading material that is appropriate as to level and interest for her pupils.

The informal reading inventory is effective and available, and should be used. The directions for giving an IRI are found in most college textbooks on the teaching of reading. The material is mimeographed to allow a sheet for each child tested. Each teacher should use an inventory based on the basal series she plans to use.

Using Goodman's (1973) miscue analysis procedure, in conjunction with the IRI, enables the teacher to gain further insight into each child's reading ability.

The "cloze" technique may be used to sample silent-reading comprehension for a group of children. The "cloze" procedure is a technique whereby words are omitted at predetermined intervals; the child is expected to fill in the missing word by using the context.

To use the "cloze" procedure, the teacher selects a parallel paragraph, or page, to that used in the oral reading inventory. Omit every fifth word and draw lines of equal length to reflect each missing word. Direct the child to read this and to fill in the blanks. The exact word, when supplied, is preferable; however, synonyms may be accepted as correct.

(11) SELF-CONCEPT

To appraise the child's self-concept, a simple device may be used. Draw "faces," using a scale of five, from the "saddest" to the "happiest" face. These faces are mimeographed with a statement below each set of five faces.

Read the statements to the group or to an individual child. Direct the children each to circle the one of the five faces which demonstrates his true feelings. Statements, such as the following, are used below each row of five faces: "This is how I feel," "This is how my teacher – friends – mother – father feel(s)," and "This is how I feel about school."

This simple scale, when used judiciously, appears to be as valid as most subjective instruments for measuring the child's self-concept, his feelings concerning others, and how he believes others perceive him. The negatively responding child should be observed more closely, however, before a judgment is actually made.

(12) EYE-HAND COORDINATION AND WRITTEN LANGUAGE

The following activity measures the child's eye-hand coordination, creative writing ability, vocabulary development, handwriting skills, and a sampling of spelling ability. Interests and attitudes are suggested by both the child's picture and his story.

Ask the child to draw a picture and color it. When the picture is complete, direct him to write a story about his picture. No help is given with spelling. (The child who cannot write may dictate a story to the teacher.) Drawing and coloring efficiency, content and length of story, vocabulary used, handwriting and spelling ability serve to measure performance adequacy.

(13) FOLLOWING DIRECTIONS

To determine whether a child has the ability to comprehend and execute one or more oral directions in exact order, the following procedure is used. Test children individually.

Give directions only once. Increase the number of commands until the child can no

Learning Aptitude, the Slingerland Screening Tests, the Illinois Test of Psycholinguistic Abilities, the Boehm Test of Basic Concepts, the Wepman Auditory Discrimination Test, the Wagner Reversal Test, the Gilmore Oral Reading Paragraphs and the Wide Range Achievement Test. These are only a few of the many standardized tests which are available.

The informal measures recommended here are adequate for rough assessment of particularly critical areas. Some norms from standardized tests were given but were not intended as inclusive.

In some instances, several different procedures are stated which involve the same area. Thus, the teacher will select the procedure she finds most appropriate for her pupils. Needless to say, informal diagnostic procedures do not yield age and grade scores which are provided when formal measures are used.

This paper is not to be interpreted as recommending a band-aid approach when major surgery is indicated. For many children, however, extensive formal testing is not necessary.

These informal measures should, however, help to answer the teacher's question when she asks, "What can I do before the psychometrist arrives?" – *3 Berkshire Road, Richmond, Va. 23221.*

REFERENCES

Anderson, R.M., et al.: Communicative Evaluation Chart from Infancy to Five Years. Cambridge, Mass.: Educators Publ. Service, 1963.

Baker, H.J., and Leland, B.: Detroit Tests of Learning Aptitude. Examiner's Handbook. Indianapolis: Bobbs-Merrill, 1967.

Benton, A.L., and Schultz, L.M.: Observations on tactual form perception (stereognosis) in preschool children. J. Clin. Psychol., 1949, 5, 359-364.

Ferinden, W.E., et al.: Educational Interpretation of the Stanford-Binet Intelligence Scale (Form LM) and the Illinois Test of Psycholinguistic Abilities. Linden, N.J.: Remediation Associates, 1970.

Gesell, A. et al.: Gesell Developmental Schedules. New York: The Psychol. Corp., 1949.

Goodman, K.S. (Ed.): Miscue Analysis Applications to Reading Instruction. Wayne State Univ., Eric Clearinghouse on Reading and Communication Skills, or National Council of Teachers of English, 1111 Kenyon Road, Urbana, Ill.

Gutteridge, M.: A study of motor achievement of young children. Arch. Psychol., 1939, 34 (244), 5-178.

Ilg, F., and Ames, L.B.: School Readiness: Behavior Tests Used at the Gesell Institute. New York: Harper & Row, 1964.

Harris, A.J.: How to Increase Reading Ability (4th Ed.). New York: David McKay, 1961.

Kirk, S.A., and Kirk, W.D.: Psycholinguistic Learning Disabilities: Diagnosis and Remediation. Chicago: Univ. of Ill. Press, 1971.

Lerner, J.W.: Children with Learning Disabilities. Boston: Houghton-Mifflin, 1971, 62-65.

O'Donnell, P.A.: Motor and Haptic Learning. San Rafael, Calif.: Dimensions Publ. Co., 1969, 8-9.

Slingerland, B.H.: Slingerland Screening Tests for Identifying Children with Specific Language Disability. Teacher's Manual. Cambridge, Mass.: Educators Publ. Service, 1970, 141.

Smith, R.M.: Teacher Diagnosis of Educational Difficulties. Columbus: Chas. E. Merrill, 1969.

APPENDIX III

DEVELOPING PERCEPTUAL MOTOR SKILLS

APPENDIX III

DEVELOPING PERCEPTUAL-MOTOR SKILLS

(SKILL CHECKLIST)

When a teacher asks for help with a student, the first step entails some type of evaluation. But just a report on the results of whatever evaluation is done is of little help to those who have to work with the student. A diagnostic report accompanied by a few generalized suggestions often elicits responses such as, "I already knew that. That's why I referred him," or "Well, that is interesting. But what do I do about it? How can I help him?"

Because these students do not respond to usual teaching techniques, teachers feel bewildered and unsure of themselves in handling them. They want step-by-step, explicit directions to follow in working with a student who has problems. Furthermore, they want the directions written down in a clear, precise manner so that they have them to refer to.

Consequently, the following training methods were chosen to give guidance to teachers in some of the areas which seem to repeatedly appear deficient in evaluation results.

- included with permission of the author, Julano Miller.
Julano Miller, P.O. Box 123, Grundy Center, Iowa 50638, is a specific learning disabilities consultant for area Education Agency Number 7, Grundy Center; Iowa.

Checking Alphabet

1. Can he sequence the letters in writing?
2. Can he show you any letter you ask for?
3. Can he name any letter you show him?
4. Can he write any letter you dictate?
5. The Dolch words should be checked next. Have him read them to you. He should know them instantly. If he makes a mistake and corrects it or if he names it correctly after some study, he really does not know the word.

Remediation Using Clay

1. Have the Dolch word or alphabet letter on a small card to copy from.
2. Have the child roll out a piece of clay until it's long and thin.
3. Have him form each letter from the clay.
4. Then have him trace each clay letter with the forefinger of the hand that he uses to write with, pushing down hard into the clay and saying the letter aloud. When it is a Dolch word, and the letters have been traced and said, then say the whole word aloud. Do this six to eight times for each word.
5. Next, put the words or letter on the board with the broad side of the chalk. The student then traces the word or letter on the board with his forefinger, saying the letter and then the whole word until the chalk disappears.

6. The student then attempts to write the word or letter on paper. He also should dictate a sentence with the word in it for the teacher to write out and for him to copy. He should keep a file of these either in a notebook or on cards.

7. Work with two words at a time to start.

8. Check on the two words at the next session. If the student can read them and write them from memory, go on to two more words.

9. He will eventually be able to take three, four, or more words at a time.

Back Tracing

1. Trace the letter or Dolch word on the child's back with your forefinger between the shoulder blades. Say each letter aloud and then the whole word. Do this five or six times.

2. Instruct the student to close his eyes and listen to the letters and feel the making of the letters on his back.

3. Have him immediately write the letter or word five or six times, saying the letter and then the whole word. If he seems to get stuck, tell him to think how the letters felt on his back.

Tracing Method for Spelling

1. Write the word on a plain piece of paper, in either manuscript or cursive form, in letters about two inches high with a black magic marker pen.

2. Have the child trace the word, following the letters written with the black felt pen, with the index finger of his writing hand. Do this six or eight times. As he traces each letter, he should say that letter aloud. When he finishes each tracing he should say the whole word.

3. Put a second piece of plain white paper over the first piece. Have the child take a pencil and write over the word following the lines of the letters. Again he says the letter symbols and the whole word at the end. He should do this about ten times, moving his paper up to a clean spot for each tracing.

4. Remove the top paper and have him copy the word on the same sheet on which it was originally written for as many times as he can get the word under the original word, saying the letters and the whole word each time.

5. Then have him try to write the word from memory, either on another piece of paper or on the board. If he fails, he should go back to the pencil tracing step and start from there.

6. Again, teach two words at a time. At the next session, check those two words. If he can spell them orally and write them, then go on to two more words.

7. The words should immediately be used in a sentence, which he either writes himself or dictates to the teacher to write for him. Then he should copy what she has written and keep these in a notebook or on cards.

8. Back tracing methods should be used for spelling, too, except that the child should keep his eyes open and look at the word as it is traced on his back.

Tracing Method for Math

1. Check the child to see how many basic number facts or multiplication tables he knows. Where he fails is your starting point.

2. With a black magic marker pen, write either four of the basic number facts or multiplication tables in the column on a piece of paper. For example:

4 X 1 = 4

4 X 2 = 8

4 X 3 = 12

4 X 4 = 16

3. Put another piece of plain white paper over the original one.

4. Have the child trace the numbers with a pencil, saying the problem and the answer aloud. Keep moving the paper up to a clean spot and trace and say the set of four numbers eight or ten times.

5. Give him a clean piece of paper to write the set of four numbers on from memory five or six times.

6. At the next session, check to see if he can write and say the four in order. Then see if he can give you the answers out of order. He should be able to do this quickly without having to think about it.

7. If he can do this, go on to four more. At the same time, give him some problems to work using the ones he has learned.

8. Back tracing the numbers he is working with will also help. The problem and the answer should be said aloud by the person doing the tracing, and the child should be looking at the problem while this is being done.

Tracing to Improve Handwriting

1. Someone with good handwriting should put words on the chalk board. They should be quite large so that gross motor function comes into use. Use the broad side of the chalk.
2. Have the child trace the word with his forefinger until the chalk disappears. Encourage him to use his whole arm from the shoulder.
3. If he seems tense, have him make large circles on the board first, swinging from the shoulder.
4. Over a period of time, reduce the size of the letters until they are normal for chalk board writing.
5. Transfer to words written very large on a piece of paper with a black magic marker.
6. Have the child place another piece of paper on top and trace with a pencil. Encourage a free swing from the elbow.
7. Gradually reduce the letters to a more normal size.
8. If the child needs to do tracing for spelling, the two things could be combined together. If not, subject-matter words could be used.

Training Written Expression

1. Many children can tell you what they want to say, but cannot write it down.

2. Have the student put on tape what he wants to write down, like a social studies report, book report, etc. It should be short to start with.

3. Have him listen to it and decide if he has it the way he wants it.

4. Have him copy it directly on paper from the tape recorder.

5. The teacher should correct the written copy for spelling and syntax with no effort to teach. Just correct it.

6. Have him recopy or type the final copy. Typing procedures are explained below.

7. After he has learned the procedures, being allowed to tape class discussions to listen to later on and reply to, would be most helpful.

Typing Procedures

1. Do not use a formal typing-class procedure.

2. Put a circle of paper on each finger used in typing as you would wear a ring with the letters printed on it that each finger hits on the keyboard.

3. This will start out as a sort of "hunt and peck" system.

4. As the student types corrected material he copied from his own tape recorded material, he will look at the finger bands to see which finger to use to hit the key.

5. As time goes on encourage him to shut his eyes to find the keys by touch, but he can still look at the finger bands to reinforce his memory.

6. When he is successful at this, he can take off the finger bands and be touch typing.

7. Speed should not be emphasized at all, only accuracy.

8. With this method the student is using his own vocabulary, with some guidance from the corrections that the teacher has made.

9. Typing for those with learning disabilities teaches spelling, sequencing, transfer from auditory to visual perceptions, and helps with finger dexterity.

Learning to Count

1. Put a number on a card, for instance a 1.

2. Place an object, like one block, with it.

3. Have the child make the numeral 1 out of clay.

4. Have him trace and say the clay number he has made while looking at the block and the number on the card.

5. Go on to the number 2, use two blocks, have the child make the number 2 from clay, trace it, and say it, etc.

6. Later add the word for the number. Have the child make the word out of clay, trace it and say it, while looking at the object and looking at the word for the number on a card.

Visual Sequencing and Memory

1. Show the child letters, words, or short phrases briefly; have him repeat them aloud sometimes; sometimes write them down.

2. Cut comic strips into sections for him to put in correct order.

3. Cut sentences of a short, simple paragraph into strips for him to put back together in consistent fashion. As he has success, lengthen the paragraph.

4. Scramble the letters in words-these could be spelling words or words from his content subjects. There are three steps to doing this. First, give him simple words spelled correctly in a list and the same words mixed up in a list in a different order, e.g.:

spell
finger
order
short

redro
thsro
pslel
gnifer

Increase the number and difficulty of these words. Use ones that he may be tracing or typing for more reinforcement. Also use words that he may want to know: car words, sporting words, hunting, fishing, etc.

5. Later, show him some correct words (starting again with simple ones and just a few); after he has looked carefully at them, take them away and give him just the scrambled words.

6. Eventually give him the scrambled words only, identical to those he has used in preceding steps.

7. Write letters or numbers on the board; erase them quickly; have him write down what he saw. Gradually increase the amount. Eventually include short phrases.

8. Make a dot-to-dot pattern; place a number by each dot and one letter from a word by each dot.

9. When the child follows the numbers around, the letters should spell out the word.

10. Later, use just letters with each dot, so the child has to figure out which dots to connect to make a word.

Auditory Memory and Sequencing

1. Dictate letters, words, phrases; have the student repeat them.
2. Increase number of letters and words; use longer phrases.
3. Have the child listen to a short paragraph on the tape recorder, and repeat on the tape what he heard, making an attempt to remember the details in the right order. Play both parts back and compare. Gradually lengthen the paragraph.

Following Directions

1. Instructions should be simply given, one at a time.
2. They should be given to the child individually after the whole class has been instructed. Either go to his desk or have him come to you.
3. Make eye contact with him to get his attention.

4. Have him repeat to you each instruction you give him. Repeating to him does not help. He needs to organize the instruction in his thinking. For this, he must say it alone.

5. If possible, have him carry out instructions right away.

Completing Assignments

1. After the class assignment has been made, tell the child to do two problems or the first two steps of your directions, then check with you before going on. If the work is correct, assign him two more, etc.

2. If he goes beyond the two problems, then give him only the two problems on a separate piece of paper so that he has to complete those and get two more from you. Cut the worksheet or workbook up if necessary.

3. Children who finish their work too fast do so because:

- They think being the first done is important.
- They have short memories and are afraid of forgetting.
- They want to be the first to get the teacher's attention.

4. Many children do not finish their work because:

- It looks impossible to do so much.
- They do not know how to organize their time.
- If they do not finish, they are very apt to get the teacher's attention.

5. This method sets a short goal. Students are assured of the teacher's attention. Their work is structured, which helps to teach organization.

APPENDIX IV

MATERIALS FOR TEACHING THE ADOLESCENT STUDENT

A. Guidelines: Special Education for Learning Disabled Students in the Secondary Schools

B. Books of High Interest and Low Vocabulary Level for Intermediate Students

APPENDIX IVA

GUIDELINES

SPECIAL EDUCATION
for Learning Disabled Students
in the
Secondary Schools

Ottawa Board of Education
January, 1976

Included with the permission of Dr. E. Thom, Coordinator of Special Education, Ottawa Board of Education.

PURPOSE

The purpose of the guidelines is to define the nature of special education and the role of the special education teacher in the secondary school in accordance with the following motions:

> "That the Board authorize the hiring of the 1631.5 in-school teachers and an additional 6 teachers over the present complement for the purpose of special teaching of high-school students with learning disabilities. These teachers would be employed at six secondary schools selected by the Administration and that these additional staff be allocated exclusive of the regular staffing formula — which is an increase of 27 teachers to 1637.5 across the system".

Minutes of the Board of Education
September 22, 1975.

> "That the 6 teacher positions identified by Board resolution re: special education come under the direct supervision of the Student Services Department".

Special Needs Committee,
October 22, 1975.

DEFINITION OF LEARNING DISABILITY

Students "with learning disabilities manifest an educationally significant discrepancy between their estimated intellectual potential and actual level of performance related to basic disorders in the learning process". (B. Bateman, Learning Disorders).

"A learning disability . . . inhibits learning certain skills in the usual way . . ." (J. Murphy, Listening, Language and Learning Disabilities).

GOAL

> "The goal of special education is the integration of as many exceptional students as possible into regular programs".
>
> Ministry of Education
> Circular H.S.1.,
> 1973/74.

AIM

The aim of special education for students with learning disabilities should be to assist them in such a way that they may remain in the mainstream of the educational system and achieve success commensurate with their learning potential.

ROLE OF THE SPECIAL EDUCATION TEACHER

General

The main role of the special education teacher is to facilitate learning for those students with learning disabilities, who are in regular school programmes, and not to teach a course for credit purposes.

Specific

1. The responsibilities of the special education teacher include:
    (a) working in close cooperation with subject teachers to make them aware of students with learning disabilities,
        (i) helping in the identification process,
        (ii) suggesting necessary programme adjustments,
        (iii) monitoring the students' progress and problems.
    (b) scheduling instructional periods either individually or in small groups so that students' individual needs may be met. In order that a student may be scheduled for a daily period, the student's academic programme will have to be modified to allow for special education instruction.
    (c) teaching and/or arranging for instruction of students with identified needs.

(d) assisting students with the organization and completion of assignments and in the development of work habits and study skills.

2. In accordance with the Ministry Provisions for Exceptional Students in the Secondary School, 1972, special education teachers should help regular teachers to provide alternative and/or modified course evaluation by:

   (a) making arrangements for oral examinations or extended times for examinations,

   (b) making available a quiet place where a student may take an examination without disturbance or distraction.

3. The special education teacher, working under the jurisdiction of the principal, must be available as a resource person to the administrative staff, teachers, students and parents.

SUGGESTED PROCEDURES

1. After identification the student's needs and relative position and goals should be openly discussed with him/her.

2. Inclusion in the programme should be voluntary. Unless the student is sufficiently motivated he/she should not be given this special help.

3. Written approval from the parent(s) should be obtained before the student is included in the programme.

4. Students with severe learning problems may be scheduled with the special education teacher for at least one 40-minute period per day.

5. Students may be instructed on a one-to-one basis in the case of serious problems or in a small group (preferably not more than 6) if problems are similar. Some students may require no direct instruction but only supervision of homework or assignments.

6. If the special education programme is to be effective, the daily total number of students involved must be restricted. The number of students directly involved daily with the special education teacher should not exceed 25.

APPENDIX IVB

BOOKS OF HIGH INTEREST AND LOW VOCABULARY LEVEL FOR INTERMEDIATE STUDENTS

J. M. Dent & Sons (Canada) Ltd.,
100 Scarsdale Road
Don Mills, Ontario, M3B 2R8

Coleman, et al.

The Deep Sea Adventure Series - Reading level -(grade 2-5)
Interest level -(8-16 years)

The Sea Hunt
Treasure Island Under the Sea
Submarine Rescue
The Pearl Divers
Frogmen in Action
Danger Below
Whale Hunt
Rocket Divers
Teacher's Manual

Rambeau, et al.

The Morgan Bay Mysteries - Reading level - (grade 2.5-4.5)
Interest level - (10-16 years)

The Mystery of Morgan Castle
The Mystery of the Marble Angel
The Mystery of the Midnight Visitor
The Mystery of the Missing Marlin
The Mystery of the Musical Ghost
The Mystery of the Monk's Island
The Mystery of the Marauder's Gold
The Mystery of the Myrmidon's Journey
Teacher's Manual

Leonard, Briscoe, Hackett

Wildlife Adventure Series - Reading level - (grade 4-5)
Interest level - (10-15 years)

Gatie the Alligator

- prepared by Margaret R. Hill

Sleepy the Otter
Skipper the Dolphin
Tawny the Mountain Lion
Bounder the Jack Rabbit
Thor the Mighty Moose
Ruff the Wolf
Arctus the Grizzly

Heffernan, et al.

Reading Motivated Series - Reading level - (grade 4)
Interest level - (11-15 years)
The Secret of Lonesome Valley
Desert Treasure
The Mysterious Swamp Rider

Hockey Heroes Series

Reading level - (grade 4-5)
Interest level - (12-18 years)

Stan Miketa: Tough Kid Who Grew Up
Frank Mahovlich: The Big M
Gilbert Perrault Makes It Happen
Bobby Hull: Superstar

Julian May

Personal Close-Up Series: Reading level - (grade 4-6)
Interest level - (10-16 years)

Jim Brown
John Unitas
Captain Cousteau
Amelia Earhart
Mickey Mantle
Hank Aaron
Hilary and Tensing
Willy Mays

Dean, Davis, Ray

Early Career Books: Reading level - (grade 3-4)

Airline
Bank
Baseball
Computers
Football
Hockey
Medical Centre
Police Department
Television Station

Young, Scott

Face-Off Series: Reading level - (grade 4-6)
Interest level - (12-16 years)

- The Silent One Speaks Up
- Learning to be Captain
- The Moscow Challengers
- Face-Off in Moscow

Radlouer, Ed and Ruth

Bowmar Reading Incentive Programme: Reading level -(grade 4-6)
Interest level -(12-17 years)

- Karting
- Mighty Midgets
- Slat Car Racing
- Motorcycles
- Drag Racing
- Teen Fair
- Funny Cars
- Motorcycle Racing
- Dune Buggies
- Dune Buggy Racing
- Surfing
- Horses
- Custom Cars
- V.W. Bugs
- Snowmobiles
- Mini Bikes

Jack Hood Supplies
31-99 Erie Street
Stratford, Canada

Bamman and Whitehead

Reading level - (grade 2-6)
Interest level - (10-15 years)

- Flight to the South Pole
- The Lost Uranium Mine
- Hunting Grizzly Bears
- Fire on the Mountain
- City Beneath the Sea
- The Search for the Piranha
- Sacred Well of Sacrifice
- Viking Treasure
- Teacher's Guide
- Pupil Activity Book

Egan - Hurlburt

Adventures Fishing - Reading level - (grade 4)
Interest level - (grade 4-7)

Adventures Hunting - Reading level - (grade 5)
Interest level - (grade 5-8)

McCall

Reading level - (grade 3)
Interest level - (8-14 years)

Cowboys and Cattle Drivers
Cumberland Gap and Trails West
Explorers in a New World
Gold Rush Adventures
Heroes of the Western Outposts
Hunters Blaze the Trails
Log Fort Adventures
Mail Riders
Men on Iron Horses
Pioneer Showfolk
Pioneer Traders
Pioneering on the Plains
Pirates and Prirateers
Settlers on a Strange Shore

Follett Publishing Company
Canadian Distributor: Ryerson Press
299 Queen Street West
Toronto, Canada

The Turner-Livingston

Reading Series: Reading level - (grade 5-6)
Interest level - (grade 7-10)

The Money You Spend
The Town you Live in
The Jobs you get
The Friends you Make
The Family you Belong to
The Person you Are

The Turner-Livingston

Communication Series - Reading level - (grade 6-7)
Interest level - (grade 7-11)

- The Television You Watch
- The Phone Calls You Make
- The Newspapers You Read
- The Movies You See
- The Letters You Write
- The Language You Speak

Interest Reading Series Books

Reading level - (grade 3-6)
Interest level - (J. and Sr. High School)

- Adventure in Space
- Buried Gold
- First Adventure at Sea
- First Men in Space
- Great Moments in American History
- The Indian Fighters
- Mystery of Broken Wheel Ranch
- Ten Great Moments in Sports

Vocational Reading Series

Reading level - (grade 4-6)
Interest level - (grade 7-12)

- The Delse Sisters, Beauticians
- John Leveron, Auto Mechanic
- Marie Perrone, Practical Nurse
- The Millers and Willie B., Butcher, Baker, Chef

Thomas Nelson & Sons, Canada Ltd.
81 Curlew Drive
Don Mills, Canada

Reader's Digest Skill Builders

Reading level - (indicated)
Interest level - (up to adult)

Grade 1, Parts 1, 2, 3

Grade 2, Parts 1, 2, 3
Grade 3, Parts 1, 2, 3
Grade 4, Parts 1, 2, 3
Grade 5, Parts 1, 2, 3
Grade 6, Parts 1, 2, 3
Grade 7, Book 1, Book 2
Grade 8, Book 3, Book 4

Reader's Digest Series - Science Readers

Grade 3 - Green Book
Grade 4 - Orange Book
Grade 5 - Blue Book
Grade 6 - Red Book

Reader's Digest - Adult Readers

Step 1 (Grades 1 and 2) - Workers in the Sky
Send For Red
Second Chance
Mystery of the Mountains

Step 2 (Grades 2 and 3) - A Race to Remember
Valley of 10,000 Smokes
Sante Fe Traders
Men Who Dare the Sea

Step 3 (Grades 3 and 4) - Guides to High Adventure
First at the Finish
I Fell 18,000 Feet
What's on the Moon

Dolch Books - Pleasure Reading Books

Reading level - (grade 4)
Interest level - (grade 3-8)

Aesop's Stories
Anderson Stories
Bible Stories
Fairy Stories
Famous Stories
Far East Stories
Gospel Stories
Greek Stories
Gulliver's Stories
Robin Hood Stories

Old World Stories
Ivanhoe
Robinson Crusoe

Oxford University Press
70 Wynford Drive
Don Mills, Ontario

New Adventures in Reading (easy reading for teenagers)

Cloudy Cove
The Shop in Silver Street
Crooked Cargo
Highland Holiday
The Lodger in Ludgate Lane
The Boston Belle

Adventure and Detection (Interest level - high, simple vocabulary)

The Women in Green
The Buttercup Affair
Stolen Goods
Private Eyes and Green Fingers
The Swimming Field
The Young Man With a Camera

MacMillan of Canada
70 Bond Street
Toronto 2, Canada

Topliner Series

Reading level - (grade 4)
Interest level - (14-18 years)

String of Time
Dragon in the Garden
Birdy and the Group
Louie's Lot
Louie's S.O.S.
Birdy Jones
The Drum
Sam and Me
Answering Miss Roberts

Breakthrough Series

Interest level - (grade 7-10)

Winner's Circle 1 -	Read.	Lev.	(gr. 3)
Winner's Circle 2	"	"	"
Way Out	"	"	"
Over the Edge	"	"	"
Beyond the Block 1	Read.	Lev.	(gr. 4)
Beyond the Block 2	"	"	"
Out of Sight	"	"	"
Where It's At	"	"	"
This Cool World 1	Read.	Lev.	(gr. 5)
This Cool World 2	"	"	"
How It Is	"	"	"
Coming Through	"	"	"
The Big Ones 1	Read.	Lev.	(gr. 6)
The Big Ones 2	"	"	"
On the Spot	"	"	"
Making the Scene	"	"	"

Hockey Action Series

Reading level - (grade 3-8)
Interest level - (12-17 years)

Puck Hog (R.L. 3-4.5)
The Championship (R.L. 3-5)
Training Camp (R.L. 4-5.5)
Rookie Under Fire (R.L. 4.5-6)
Hockey Powerhouse (R.L. 5-6.5)
Battle for the Cup (R.L. 5.5-7)
Brodie Turns Pro (R.L. 6-7.5)
Playoff Pressure (R.L. 6.5-8)
Teacher's Guide

Pine Mountain Adventures

Reading level - (grade 4-6)
Interest level - (10-16 years)

Skiing Sabotage (R.L. 4)
Mountain Mishap (R.L. 4.5)
Devil's Shute (R.L. 4.8)
Mysterious Rescue (R.L. 5)
End of a Legend (R.L. 5.5)

APPENDIX V

TOOLS FOR TEACHING READING

A. Barbe Reading Skills Checklist

B. Dolch's List of 220 Basic Sight Words and
95 Commonest Nouns

C. A Brief Outline of Phonic and Structural Skills

D. Remedial Reading Checklist of Skills

APPENDIX VA

BARBE READING SKILLS CHECK LIST
READINESS LEVEL

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word Recognition

1. Interested in words ______
2. Recognizes own name in print ______
3. Knows names of letters ______
4. Knows names of numbers ______
5. Can match letters ______
6. Can match numbers ______
7. Can match capital and small letters ______

B. Word Meaning

1. Speaking vocabulary adequate to convey ideas ______
2. Associates pictures to words ______
3. Identifies new words by picture clues ______

II. Perceptive Skills:

A. Auditory

1. Can reproduce pronounced two and three syllable words ______
2. Knows number of sounds in spoken words ______
3. Can hear differences in words ______
4. Able to hear length of word (Which is shorter? boy - elephant) ______
5. Able to hear sound:
   - At beginning of word ______
   - At end of word ______
   - In middle of word ______
6. Hears rhyming words ______
7. Aware of unusual words ______

B. Visual

1. Uses picture clues
2. Recognizes:
   - Colors ______
   - Sizes (big, little; tall, short) ______
   - Shapes (square, round, triangle) ______
3. Observes likenesses and differences
   - in words ______
   - in letters ______
4. Left-right eye movements ______

III. Comprehension:

A. Interest

1. Wants to learn to read ______
2. Likes to be read to ______
3. Attention span sufficiently long ______

B. Ability

1. Remembers from stories read aloud:
   - Names of characters ______
   - Main ideas ______
   - Conclusion ______
2. Can keep events in proper sequence ______
3. Uses complete sentences ______
4. Can work independently for short periods ______
5. Begins at front of book ______
6. Begins on left hand page ______
7. Knows sentence begins at left ______

IV. Oral Expression:

A. Expresses self spontaneously ______

B. Able to remember five word sentence ______

C. Able to make up simple endings for stories ______

D. Able to use new words ______

Teacher's Notes:

BARBE READING SKILLS CHECK LIST
FIRST GRADE LEVEL

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word Recognition

1. Recognizes words with both capital and small letters at beginning ________
2. Is able to identify in various settings the following words usually found in preprimers:

— a
— airplane
— an
— and
— apple
— are
— at
— away
— baby
— ball
— be
— bed
— big
— birthday
— blue
— boat
— bow-wow
— cake
— call
— can
— cap
— car
— Christmas
— come
— cookies
— cowboy
— daddy
— did
— dinner
— dish

— do
— dog
— down
— father
— fast
— find
— fine
— fish
— for
— funny
— get
— girl
— give
— go
— good
— good-by
— green
— has
— have
— he
— help
— her
— hers
— hide
— home
— house
— I
— in
— is
— it

— jump
— kitten
— like
— little
— look
— make
— may
— me
— mitten
— mother
— morning
— my
— near
— no
— not
— oh
— on
— one
— party
— pie
— play
— pretty
— puppy
— ran
— red
— ride
— run
— said
— see
— she

— show
— sleep
— something
— splash
— stop
— surprise
— table
— thank
— that
— the
— tree
— to
— toy
— two
— up
— want
— we
— what
— where
— will
— with
— work
— yellow
— you
— your

Only additional words found in six of seven leading primers were:

— about
— again
— all
— am
— as
— back
— black
— boy
— but
— came
— could
— cow
— eat
— farm
— from

— fun
— had
— happy
— him
— his
— how
— just
— know
— laugh
— let
— long
— man
— many
— Mr.
— must

— night
— new
— now
— of
— put
— rabbit
— sat
— saw
— so
— some
— soon
— take
— them
— then
— there

— they
— this
— too
— us
— walk
— was
— water
— way
— went
— were
— when
— white
— wish
— who
— yes

(List prepared by Olive Reeve, Whitewater (Wisc.) State College.)

II. Word Analysis:

A. Phonics

1. Recognizes single initial consonants and can make their sound:

b —
d —
f —
h —
j —

k —
l —
m —
n —
p —

q —
r —
s —
t —
v —

w —
x —
y —
z —

____

2. Knows single consonant sounds in final position (hat) ________
3. Knows single consonant sounds in middle position (seven) ________
4. Names of vowels are introduced ________
5. Knows sounds of initial consonant blends ________
(listed in order of difficulty)

sh—
st—
bl—
pl—
tr—

fr—
wh—
th—
ch—
fl—

cl—
gl—
sp—
sm—
sn—

sw—
tw—

B. Structural Analysis

1. Knows endings ________
   - ed sound as "ed" in wanted —
   - ed sound as "d" in moved —
   - ed sound as "t" in liked —
   - ing —
   - s —
2. Recognizes compound words (into, upon) ________
3. Knows common word families:

all—
at—
it—

et—
en—
in—

an—
ill—
ell—

ay—
ake—
or—

C. Word Form Clues

1. Notices capital and small letters ________
2. Notices length of words ________
3. Notices double letters ________

III. Comprehension:

A. Understands that printed symbols represent objects or actions ________

B. Can follow printed directions (Find the boy's house.) ________

C. Can verify a statement (See if Sandy ran away.) ________

D. Can draw conclusions from given facts (What do you think happened then?) ________

E. Can recall what has been read aloud ________

F. Can recall what has been read silently ________

G. Can place events in sequence ________

H. Can remember where to find answers to questions ________

IV. Oral and Silent Reading Skills:

A. Oral Reading

1. Uses correct pronunciation ________
2. Uses correct phrasing (not word-by-word) ________
3. Uses proper voice intonation to give meaning ________
4. Has good posture and handles book appropriately ________
5. Understands simple punctuation:
   - period (.) —
   - comma (,) —
   - question mark (?) —
   - exclamation mark (!) —

B. Silent Reading

1. Reads without vocalization: ________
   - Lip movements —
   - Whispering —
2. Reads without head movements ________

BARBE READING SKILLS CHECK LIST
SECOND GRADE LEVEL

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word Recognition

1. Recognizes 220 Dolch Basic Sight Words (by end of year) ___

___ a
___ all
___ am
___ an
___ and
___ are
___ at
___ big
___ blue
___ call
___ can
___ come
___ do
___ down
___ funny
___ go
___ good
___ he
___ help
___ here
___ I
___ in
___ is
___ it
___ jump
___ like
___ little
___ look
___ make
___ me
___ out
___ play
___ pretty
___ ran
___ red
___ ride
___ run
___ see
___ so
___ the
___ to
___ up
___ we
___ you

___ as
___ away
___ be
___ black
___ brown
___ by
___ came
___ did
___ eat
___ fall
___ find
___ for
___ get
___ going
___ have
___ her
___ him
___ his
___ if
___ into
___ laugh
___ let
___ live
___ may
___ my
___ no
___ old
___ on
___ one
___ put
___ saw
___ said
___ she
___ sit
___ some
___ stop
___ three
___ today
___ two
___ was
___ will
___ work
___ yes
___ yellow

___ again
___ ate
___ black
___ but
___ cold
___ cut
___ fast
___ first
___ five
___ fly
___ four
___ give
___ goes
___ going
___ got
___ green
___ had
___ has
___ hot
___ its
___ long
___ made
___ many
___ new
___ not
___ of
___ open
___ please
___ or
___ our
___ pull
___ read
___ saw
___ say
___ sing
___ six
___ soon
___ ten
___ upon
___ us
___ who
___ why
___ wish
___ your

___ about
___ after
___ always
___ around
___ ask
___ because
___ been
___ before
___ best
___ buy
___ does
___ for
___ found
___ full
___ gave
___ grow
___ hold
___ how
___ just
___ keep
___ kind
___ much
___ must
___ now
___ off
___ once
___ only
___ round
___ sleep
___ small
___ take
___ tell
___ thank
___ that
___ they
___ this
___ too
___ try
___ under
___ walk
___ well
___ were
___ white
___ with

___ any
___ better
___ both
bring
___ carry
___ clean
___ could
___ done
___ don't
___ draw
___ drink
___ eight
___ every
___ hurt
___ know
___ light
___ myself
___ never
___ own
___ pick
___ right
___ seven
___ shall
___ show
___ their
___ them
___ then
___ there
___ these
___ think
___ those
___ together
___ use
___ very
___ want
___ warm
___ wash
___ went
___ what
___ when
___ where
___ which
___ would
___ write

2. Use word form clues
   - a. Configuration ___
   - b. Visual similarity of rhyming words (call, fall, ball) ___
3. Is familiar with structural analysis
   - a. Little words in big words (many) ___
   - b. Compound words (barnyard) ___
   - c. Possessives and word endings:

     's___ er___
     d___ est___
     ed___ y___
     ing___ ly___
     t___
   - d. Contractions: ___

     I'm___ don't___
     I'll___ won't___
     can't___

B. Word Meaning

1. Multiple meanings of words ___
2. Synonymous meanings (jolly-happy) ___
3. Opposites (up—down) ___
4. Words pronounced the same (rode—road) ___

II. Word Analysis:

A. Phonics

1. Knows consonant sounds taught in first grade (b, d, f, h, j, k, l, m, n, p, q, r, s, t, v, w, x, y, z and st, tr, fr, sm, sn, sw, tw, bl, gl, fl, pl, cl, sh, ch, wh, th) ___
2. Applies these sounds and blends to:
   - a. initial position in words (let) ___
   - b. final position in words (bank) ___
   - c. medial position in words (little) ___
3. Knows word families:

   ou as in out___ er as in her___
   ow as in show and ur as in fur___
   cow___ ir as in bird___
   oi as in oil___
   oy as in boy___
   oo as in balloon___ eck as in neck___
   and book___ ick as in sick___
   aw as in straw___ ack as in back___
   ew as in new___ uck as in duck___
   ight as in night___ ing as in sing___
   ind as in find___ ike as in like___
4. Short vowel sounds (a, o, i, u, e) (taught in this order) ___
5. Long vowel sounds ___
6. Understands function of "y" as a consonant at beginning of word (yard) and vowel (bicycle) anywhere else ___
7. Knows two sounds of c and g:

   C followed by i, e or y makes s sound ___
   C followed by a, o or u makes k sound ___
   (examples: city, cent and cat, cot)
   G followed by i, e or y makes j sound ___
   G followed by a, o or u makes guh sound ___
   (examples: ginger, gym and game, gun)
8. Knows initial consonant sound includes all consonants up to first vowel ___
9. Knows three letter initial blends ___

   str___ spr___
   sch___ spl___
   thr___ chr___
10. Phonics rules:
    - a. A single vowel in a word or syllable is usually short (hat) ___
    - b. A single e at the end of a word makes the preceding vowel long (hate) ___
    - c. A single vowel at the end of a word is usually long (she) ___
    - d. When there are two vowels together, the first is long and the second silent (pail, train) ___
    - e. Vowels are influenced when followed by "r," "w" and "l"

      star___
      saw___
      all___

B. Structural Analysis

1. Recognizes root or base words (mines, mined, miner) ___
2. Recognizes word endings ___

   en as in waken ___
   ful as in careful ___
3. Knows contractions: ___

   isn't___ you're___
   I've___ let's___
   I'm___ it's___
   he's___ we've___
4. Knows possessives (Bill's) ___
5. Can disconnect printed fi and fl (fish and fly) ___

III. Comprehension:

A. Association of ideas of material read

1. Can draw conclusions ___
2. Can predict outcomes ___
3. Can find proof ___
4. Can associate text with pictures ___

B. Organization of ideas

1. Can follow printed directions ___
2. Can find main idea ___
3. Can follow plot sequence ___

C. Locating information

1. Can use: ___

   table of contents ___
   page number ___
   titles ___
2. Can find specific information ___

D. Appreciation

1. Able to dramatize stories read ___
2. Able to illustrate stories read ___
3. Able to tell a story which has been read previously ___
4. Owns at least several books which he particularly likes ___

IV. Oral Reading:

A. Reads clearly and distinctly ___
B. Reads with expression ___
C. Reads fluently ___
D. Reads so that listeners enjoy the story ___

BARBE READING SKILLS CHECK LIST
THIRD GRADE LEVEL

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word Recognition

1. Recognizes Dolch 220 Basic Sight Words ____

— a
— all
— am
— an
— and
— are
— at
— big
— blue
— call
— can
— come
— do
— down
— funny
— go
— good
— he
— help
— here
— I
— in
— is
— it
— jump
— like
— little
— look
— make
— me
— out
— play
— pretty
— ran
— red
— ride
— run
— see
— so
— the
— to
— up
— we
— you

— as
— away
— be
— black
— brown
— by
— came
— did
— eat
— fall
— find
— for
— get
— going
— have
— her
— him
— his
— if
— into
— laugh
— let
— live
— may
— my
— no
— old
— on
— one
— put
— saw
— said
— she
— sit
— some
— stop
— three
— today
— two
— was
— will
— work
— yes
— yellow

— again
— ate
— black
— but
— cold
— cut
— fast
— first
— five
— fly
— four
— give
— goes
— going
— got
— green
— had
— has
— hot
— its
— long
— made
— many
— new
— not
— of
— open
— please
— or
— our
— pull
— read
— saw
— say
— sing
— six
— soon
— ten
— upon
— us
— who
— why
— wish
— your

— about
— after
— always
— around
— ask
— because
— been
— before
— best
— buy
— does
— for
— found
— full
— gave
— grow
— hold
— how
— just
— keep
— kind
— much
— must
— now
— off
— once
— only
— round
— sleep
— small
— take
— tell
— thank
— that
— they
— this
— too
— try
— under
— walk
— well
— were
— white
— with

— any
— better
— both
bring
— carry
— clean
— could
— done
— don't
— draw
— drink
— eight
— every
— hurt
— know
— light
— myself
— never
— own
— pick
— right
— seven
— shall
— show
— their
— them
— then
— there
— these
— think
— those
— together
— use
— very
— want
— warm
— wash
— went
— what
— when
— where
— which
— would
— write

2. Refinement of skills previously taught ____
   a. Compound words
   b. Prefixes and suffixes:

a — dis — ful —
un — in — less —
ex — th — ness —
be — ty —

   c. Identification of root words ____
   d. Knows all initial consonant sounds (single sounds and blends—up to first vowel in word) ____
   e. Can read all contractions ____

B. Word Meaning

1. Provided many experiences to increase speaking and reading vocabulary ____
2. Able to select descriptive and figurative words and phrases ____
3. Able to supply synonyms, antonyms and homonyms ____
4. Understands use of elementary school dictionary to find word meaning ____

II. Word Analysis:

A. Review and refine previously taught skills:

1. All initial consonant sounds ____
2. Short and long vowel sounds ____
3. Changes in words by:
   a. adding s, es, d, ed, ing, er, est ____
   b. dropping final e and adding ing ____
   c. doubling the consonant before adding ing ____
   d. changing y to i before adding es ____
4. Compound words ____
5. Contractions ____
6. Vowel rules
   a. vowel in one syllable word is short ____
   b. vowel in syllable or word ending in e is long ____
   c. two vowels together, first is long and second is silent ____
7. Possessive forms ____
8. C followed by i, e, y makes s sound ____
   C followed by a, o, u makes k sound ____
9. G followed by i, e, y makes j sound ____
   G followed by a, o, u makes guh sound ____
10. Silent letters in kn, wr, gn ____

B. Learns new skills of:

1. Forming plurals
   by adding s, es, ies
   by changing f to v and adding es ____
2. Similarities of sound such as x and cks (box—blocks) ____

C. Syllabication rules

1. There are usually as many syllables in a word as there are vowels ____
2. Where there is a single consonant between two vowels, the vowel goes with the first syllable (pu/pil) ____
3. When there is a double consonant, the syllable break is between the two consonants and one is silent (example: lit/tle) ____

D. Can hyphenate words using syllable rules ____

E. Understands use of primary accent mark ____

F. Knows to accent first syllable, unless it is a prefix, otherwise accent second syllable ____

III. Comprehension:

A. Can find main idea in story ____
B. Can keep events in proper sequence ____
C. Can draw logical conclusions ____
D. Is able to see relationships ____
E. Can predict outcomes ____
F. Can follow printed directions ____
G. Can read for a definite purpose:
   1. for pleasure ____
   2. to obtain answer to question ____
   3. to obtain general idea of content ____
H. Classify items ____
I. Use index ____
J. Alphabetize words by first two letters ____
K. Knows technique of skimming ____
L. Can determine what source to obtain information (dictionary, encyclopedia, index, glossary, etc.) ____
M. Use maps and charts ____

IV. Oral Reading:

A. Reads with a pleasing voice quality ____
B. Reads with adequate volume ____
C. Reads with clear and distinct enunciation ____
D. Accuracy in pronunciation ____
E. Ability to convey meaning to listeners ____

BARBE READING SKILLS CHECK LIST
FOURTH LEVEL READING SKILLS

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word Recognition
1. Introduce new words in content fields ___
2. Recognizes similarities of known words ___
    a. compound words ___ d. plurals ___
    b. root words ___ e. hyphenated words ___
    c. suffixes, prefixes ___ f. contractions ___
3. Recognizes unusual characteristics of words ___

B. Word Meaning
1. Develop ability in getting meaning from context ___
2. Use new words in sentences to show meaning ___
4. Knows punctuation ___
    a. italics ___ c. parenthesis ___
    b. quotation marks ___ d. exclamation marks ___
5. Use of map skills ___

C. Review Dolch Words

II. Word Attack Skills:

A. Structural analysis
1. Knows rules for syllables
    a. Each syllable must contain a vowel and a single vowel can be a syllable ___
    b. Suffixes and prefixes are syllables with meanings of their own ___
    c. The root word is not divided ___
    d. If the first vowel is followed by two consonants, the first syllable usually ends with the first consonant (example: pen cil) ___
    e. If the first vowel is followed by a single consonant, the consonant usually begins the second syllable (example: a maze, am ple) ___
    f. If a word ends in le preceded by a consonant, that consonant begins the last syllable ___
    g. The letter x always goes with the preceding vowel to form a syllable (example: ex it) ___
    h. The letters ck go with the preceding vowel and end the syllable (example: chick en) ___
2. Knows accent clues
    a. The first syllable is usually accented, unless it is a prefix ___
    b. Beginning syllables de, re, be, in and a are usually unaccented ___
    c. Endings that form syllables are usually unaccented (run ning) ___
    d. ck following a single vowel is accented (example: jack et) ___
3. Teach these suffixes and prefixes:
    a. Suffixes:

ness	(being)	sickness	___
ment	(result of)	movement	___
ward	(in direction of)	backward	___
ous	(full of)	joyous	___
ious	(abounding in)	gracious	___
eous			
et	(little)	leaflet	___
able	(capable of being)	capable	___
ible		credible	___
ic	(like, made of)	magic	___
ish	(like)	foolish	___
ant	(being)	vacant	___
ent	(one who)	president	___
age	(collection of)	baggage	___
ance	(state of being)	disturbance	___
ence	(state or quality)	violence	___
wise	(ways)	crosswise	___
ling	(little)	duckling	___
ty	(state)	unity	___
ity		vicinity	___
ure	(denoting action)	pleasure	___
ion	(condition or quality)	action	___

    b. Prefixes:

dis	(not, apart)	dismiss	___
in	(not)	invade	___
mis	(wrong)	mistake	___
anti	(against)	anticlimax	___
non	(not)	nonsense	___
com	(with)	combine	___
con	(with)	connect	___
pre	(before)	prepare	___
super	(over)	superior	___
tri	(three)	tricycle	___
sub	(under)	submarine	___
post	(after)	postscript	___
ab	(from)	abnormal	___
trans	(across)	translate	___
em	(in)	embark	___
de	(from)	depart	___
inter	(between)	interurban	___
pro	(in front of)	promote	___
ex	(out of or out)	explain	___
en	(in)	enter	___
ob	(against)	object	___
per	(fully, through)	perfect	___

B. Phonic analysis
1. Review phonic skills
    a. Single consonants and blends ___
    b. Short and long vowels ___
    c. Vowel teams:
        ee___ au___ oi___
        ea___ aw___ oy___
        ai___ oa___ ou___
        ay___ oo___ ew___
2. Review Vowel rules
    a. In attacking a vowel sound try first the short sound; if the word then doesn't make sense try the long sound.
    b. Vowels are usually short when they appear as single vowels and are followed by a consonant.
    c. Vowels are usually given the long sound when they appear alone and are the last letters of a word.
    d. When two vowels appear together in a word, the first vowel is long and the second is silent.
    e. In short word containing two vowels where one of the vowels is a final e, the first vowel will have a long sound while the final e is silent.

C. Training in use of dictionary and glossary
1. As taught on third grade level.
    a. Review order of letters in alphabet.
    b. Review the alphabetical arrangement of words.
2. Teach the division of dictionary to determine in which 1/3 or 1/4 the word may be found.
3. Teach the meaning and use of the phonetic spelling that follows in parenthesis each word in the dictionary.
4. Teach the meaning and use of the pronunciation key given at the bottom of every page.
5. Teach the selecting of the meaning which fits best according to the context in which the word is used.
6. Teach the meaning and use of guide words.
7. Teach the meaning and use of the secondary accent mark.

III. Comprehension:

A. Finding the main idea
1. Choosing titles for material read
2. Summarizing
3. Can identify key words and topic sentences

B. Finding details
1. Finding specific information
2. Interpreting descriptive words and phrases
3. Selecting facts to remember
4. Selecting facts to support main idea
5. Using study guides, charts, outlines
6. Verifying answers
7. Arranging ideas in sequence

C. Creative reading
1. Able to interpret story ideas (generalize)
2. Able to see relationships
3. Able to identify the mood of a reading selection
4. Able to identify author's purpose
5. Able to identify character traits

D. Formal outlining
1. Form ___
    a. Main ideas (I. II. III)
    b. Subordinate ideas (A. B. C)
2. Talking from an outline

IV. Oral Reading:

A. Review previously taught skills ___
B. Eye-voice span of three words ___

BARBE READING SKILLS CHECK LIST
FIFTH LEVEL READING SKILLS

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:

A. Word recognition of vocabulary in content areas

Social Studies	English	Arithmetic	Science	Miscellaneous

B. Meaning of words
1. Interpreting word meanings
2. Semantics
3. Synonyms, antonyms, homonyms, heteronyms
4. Knows abstract meanings of words
5. Understands figurative and colorful expressions
6. Understands colloquial speech

II. Word Attack Skills:

A. Phonics skills
1. Syllabication
   - a. Each syllable must contain a vowel and a single vowel can be a syllable.
   - b. The root or base word is a syllable and is not divided.
   - c. Blends are not divided. (th str)
   - d. Suffixes and prefixes are syllables. (dust y in come)
   - e. If the vowel in a syllable is followed by two consonants, the syllable usually ends with the first consonant.
   - f. If a vowel in a syllable is followed by only one consonant, the syllable usually ends with a vowel.
   - g. If a word ends in le, the consonant just before the l begins the last syllable.
   - h. When there is an r after a vowel, the r goes with the vowel to make the "er" sound. (er ir ur)
2. Vowel sounds (review long and short sounds)
   - a. When there is only one vowel in a word or syllable the vowel is short.
   - b. When there are two vowels in a word or syllable, the first vowel is long and the second is silent.
3. Accent.
   - a. In a word of 2 or more syllables, the first syllable is usually accented unless it is a prefix.

B. Dictionary
1. Alphabetization.
   - a. Division into quarters and thirds.
   - b. Classifying words by second, third, and fourth letters.
2. Using a dictionary.
   - a. Recognize and learn abbreviated parts of speech as n. = noun; v. = verb; adj. = adjective; adv. = adverb.
   - b. Learning the preferred pronunciation.
3. Use of guide words.
4. Syllabication and accent.
5. Interpreting diacritical markings. (bottom of page)
6. Interpreting key to pronunciations. (bottom of page)
7. Interpreting phonetic re-spellings.
8. Cross references.
9. Plurals — irregular. (deer, deer shelf, shelves)
10. Comparative and superlative adjectives. (many, more, most)
11. Change in accent and its effect on pronunciation and meaning of words. (pre'sent, present')
12. Secondary accent.
13. Parts of a verb. Tenses — present and past.
14. Adverbs derived from adjectives. (ly ending as a clue or help.)

C. Glossary
1. Dictionary of words for one particular book.
2. Use guide words.
3. Find meanings to understand what is being read.

D. Context clues
1. Review using context clues.
2. Review associating ideas with words.
3. Review associating ideas with characters.
4. Sentence structure. (Noun, verb)
5. In poetry. Rhythm scheme can sometimes help.

III. Comprehension:

A. Locating information
1. Table of contents.
   - a. Examine tables of contents of several books.
   - b. List titles and have pupils use table of contents to locate pages.
2. Examine books to find: title page, pictures, key, guide words, publisher, copyright year.

B. Reference materials
1. The encyclopedia
   - a. Topics arranged alphabetically.
   - b. Show meaning of characters on back of each volume.
   - c. Compare dictionaries and encyclopedias for differences of materials.
   - d. Pupils should know names of important children's encyclopedias.
2. The atlas and maps.
   - a. Examine atlas to find answers for questions on location, relative size, direction and distance.
   - b. Use maps to explain latitude and longitude. Compare with known facts about streets and highways.
3. Magazines and newspapers. Use to supply more recent information than textbook could contain.
4. Knows proper use of dictionary.
5. Time tables.
   - a. Reading and interpreting.
   - b. Following directions.
6. Card catalogue.
   - a. Explain that every book has its place on the shelf.
   - b. Each class of books has its own call number.
   - c. Examine cards. Author, title, subject
   - d. Give practice in location of titles and call numbers.
7. Using a telephone book.
8. Catalogues.

C. Reading to organize
1. Outlining. Use roman numerals and letters.
2. Establish a sequence. Pupils list sentences in order of event.
3. Follow directions.
4. Summarize.

D. Note taking
1. From reading
2. From lectures

E. Reading for appreciation
1. To derive pleasure
2. To form sensory impressions
3. To develop imagery
4. To understand characters
   - a. physical appearance
   - b. emotional make-up

IV. Oral Reading:

- A. Recognize and pronounce words with speed and accuracy.
- B. Group words into meaningful phrases.
- C. Interpret marks of punctuation accurately.
- D. Re-express to an audience the meaning and feelings expressed by an author.
- E. Express emotion sincerely.
- F. Read in a pleasant, well-modulated voice.
- G. Read with poise and self-confidence.
- H. Dramatize portions of the story.
- I. "Televise" or give radio version of story incidents.
- J. Take part in a stage version of a story.
- K. Verify answers to questions.
- L. Interpret characterizations.
- M. Interpret word pictures.
- N. Interpret general mood of text. e.g. humor—suspense.
- O. Interpret sensations given by words.
- P. Interpret the organization of text.
  1. Main thought in the paragraph.
  2. Main events in sequence.
  3. Main heads and sub-heads in outline.
  4. Directions for carrying out an activity.

BARBE READING SKILLS CHECK LIST
SIXTH LEVEL READING SKILLS

(Last Name) (First Name) (Name of School)

(Age) (Grade Placement) (Name of Teacher)

I. Vocabulary:
- A. Word recognition.
  - 1. Context clues.
    - a. How the word is used in a sentence.
    - b. Function of word.
  - 2. Picture clues.
    - a. Visual impressions of words.
    - b. Configuration.
  - 3. Language rhythms.
    - a. Rhyming clues.
    - b. Appreciation for general rhythm of well-expressed ideas.
- B. Prefixes.

Prefix	Meaning
[illegible]	from, away
[illegible]	without, not
[illegible]	to, toward
[illegible]	before
[illegible]	two, twice
[illegible]	around
[illegible]	from, down from
[illegible]	apart, not
[illegible]	through, around
[illegible]	out of, from
[illegible]	put, in
[illegible]	into, not
[illegible]	between
[illegible]	in, into, among
[illegible]	within, against
[illegible]	wrong, wrongly
[illegible]	not
[illegible]	whole, all
[illegible]	fully, through
[illegible]	around, about
[illegible]	after, behind
[illegible]	before
[illegible]	for, in front of
[illegible]	back, again
[illegible]	aside
[illegible]	half, partly
[illegible]	under
[illegible]	over, above
[illegible]	beyond, across
[illegible]	three, thrice
[illegible]	not

Suffixes.

Suffix	Meaning
able, ible	capable of being
acy, ace, ancy, ance	state of being
an, ean, ian	one who, relating to
age	act or condition
ant	n.—one who, adj. being
al, ar	relating to, like
ary	n.—one who—(Place where)
	adj.—relating to
ette	one who is little.
en	made
ence	state of quality
ent	adj.—being, n.—one who
full	full of
fy, ify	to make
hood	state, condition
ic	like, made of
ice	that which, quality or state of being
id	being in a condition of
ion	act or state of being
ise, ize	to make
ist, ite	one who
ity, ty	state
ive	relating to
less	without
ly	in a way
ment	act or state of being
ness	state of being
er, ar, or	one who, that which
ory	
ose, ous	abounding in
some	full of
ward	turning to, in direction
y	like or full of

Prefixes and suffixes list prepared by Ruth Strang.

  - 4. Initial and ending sounds.
    - a. Listening for beginning sounds.
    - b. Completing sounds of words.
- C. Word Meaning.
  - 1. Multiple meanings.
  - 2. Associating words and feelings.
  - 3. Formal and informal language.
    - a. Speech pattern.
    - b. Level of language usage.
  - 4. Recall.
    - a. Aided.
    - b. Unaided.
  - 5. Hyphenated words.
  - 6. Synonyms—same or nearly same.
  - 7. Homonyms—pronounced same—different meaning and spelling.
  - 8. Antonyms—opposites.
  - 9. Heteronym (pronounced differently—same spelling)
  - 10. Interpreting colloquial and figurative expressions.
  - 11. Enriching imagery.

II. Word Attack Skills:
- A. Phonic and structural characteristics of words. Initial consonants—word families—simple endings.
  - 2. Consonant blends and short and long vowels.
  - 3. Syllabication, prefixes, suffixes.
  - 4. Teams—oi, oy, aw, au.
- B. Vowel sounds.
  - 1. Vowel rules.
    - a. When there is only one vowel in a word or syllable, the vowel is short.
    - b. When there are two vowels in a word or syllable, the first vowel is long and the second is silent.
    - c. When there are two vowels together, the first vowel is long and the second is silent.
  - 2. Rule I—Every syllable has at least one vowel in it. eg. ever—never—children.
  - 3. Rule II.—Two vowels in a word or syllable—first is long, second is silent. kit—kite; at—ate.
  - 4. Rule III—When 2 vowels are together, the first is long and the second is silent. ("ou" an exception) mail, meat, pie, boat.
  - 5. Blended sounds of vowel forms. The combination of au and aw makes a sound like awe. Ou and ow make the sound "ow" like when you are hurt. Oy and oi make sound like boy.
- C. Syllabication.
  - 1. Rules for syllabi...
    - a. Each syllable must have a vowel and a single vowel can be a syllable.
    - b. The root word is a syllable and not divided.
    - c. Blends are not divided (th, str, wh, etc.)
    - d. Suffixes and prefixes are syllables.
    - e. Suffix—ed if preceded by a single d or t usually forms separate syllable. (rest ed)
    - f. If vowel in a syllable is followed by two consonants, the syllable ends with the first consonant.
    - g. If vowel in a syllable is followed by only one consonant, the syllable ends with a vowel.
    - h. If a word ends in le, the consonant just before the l begins the last syllable. (ta-ble han-dle)
    - i. When there is an r after a vowel, the r goes with the vowel to make the "er" sound.
- D. Accents. (Rules)
  - 1. In a word of two or more syllables, the first syllable is usually accented unless it is a prefix.
  - 2. In most two syllable words that end in a consonant followed by y, the first syllable is accented and the last is unaccented.
  - 3. Beginning syllables de, re, be, ex, in, and a are usually not accented.
  - 4. When a suffix is added, the accent falls on or within the root word.
  - 5. Endings that form syllables are usually unaccented.
  - 6. When a final syllable ends in le, that syllable is usually not accented.
- E. Possessives.
- F. Contractions.
- G. Silent letters.
- H. Dictionary skills.
- I. Glossary.

III. Comprehension:
- A. Outlining.
  - 1. Note taking.
  - 2. Sequence of ideas or events.
  - 3. Skimming.
    - a. Locating facts and details.
    - b. Selecting and rejecting materials to fit a certain purpose.
  - 4. Main ideas of paragraphs.
  - 5. Interpreting characters' feelings.
  - 6. Topic sentences.
- B. Following directions.
- C. Drawing conclusions.
- D. Reading for verification.
- E. Locating information.
  - 1. Reference Materials in reading.
    - a. Graphs.
    - b. Maps—Reading and interpreting in detail.
    - c. Encyclopedias—Locating materials or research.
    - d. Headings and other typographical aids.
  - 2. Library skills.
    - a. Card catalogs, use of. (Cross reference)
    - b. Book classifications.
    - c. Care of books and other materials.
  - 3. Periodicals or sources of information.
    - a. Authors.
    - b. Introductions—author's.
    - c. Table of Contents.
    - d. Index—use of.
    - e. Glossary.
    - f. Title page.
    - g. Copyright.
    - h. Date of publication.
    - i. Footnotes.
    - j. Tables.
  - 4. Resource materials.
    - a. Packets and pictures.
    - b. Charts—detail.
  - 5. Resource people.
- F. Rate or Reading.
  - 1. Different rate for different purpose.
  - 2. Comprehension at high level.
- G. Critical reading.

IV. Oral Reading:
- A. Choral reading and poetry.
  - 1. Pronunciation.
  - 2. Phrasing.
  - 3. Rhymes.
  - 4. Interpretations.
- B. Listening appreciation.

APPENDIX VB

DOLCH'S LIST OF 220 BASIC SIGHT WORDS
AND 95 COMMONEST NOUNS

Arranged according to phonic elements and generalizations.

I Words with short vowel sounds

a - a am an and apple as ask
at back black can cat fast grass
had hand has man rabbit ran thank
that

i - big bring chicken children did drink fish
hill him his if in is it
its kitty little milk pick pig ring
sing sit six stick thing think this
which wind wish with

o - box dog got hot long not of
off on robin song stop top

u - but cut duck funny jump just
much must run sun up us

e - bed bell best egg get help let
men nest red seven ten them then
went when yes

II Words with "l" control

all ball call fall shall small

bell tell well

hill will

doll

full pull

III Words with "r" control

after are better bird brother car carry

corn door every far farm farmer father

first floor for garden girl her horse

hurt letter morning mother never or party

sister squirrel start together under very warm

work

IV Irregular words

any buy come could do does done

eight eye four from give goes have

laugh light live many night one once

only pretty put right said shoe some

the their there they to two walk

want was wash watch water were what

where who would you your

V Words with long vowel sounds

(a) vowel-consonant-vowel

ate baby cake came game gave made
make name paper table take
fire five like ride time white write
home open over those
blue picture use
here these

(b) two vowels together

ai-ay again away always chair day may
play rain say way
oa boat coat
ea-ee been clean eat feet green keep
please read see seed sheep sleep
street three tree

(c) long vowels in one-syllable words

be by fly go (going) be I
me my no she so try we
why
both cold hold old told don't kind
find

VI Words with vowel combinations having special sounds

au-aw	draw	saw				
oi-oy	boy	toy				
ou-ow	about	around	brown	cow	down	flower
	found	ground	house	how	now	our
	out	round				
ow (long o)		grow	know	own	show	
		snow	window	yellow		
oo (look) oo (soon)		good	look	wood		
		school	soon	too		
ea (as short e)		bear	bread	head		
ew		new				
ey		money				

VII Compound words

before because birthday good-by into myself

today upon

VIII Special words

Christmas Santa Claus

RE: DOLCH SHORT "a" WORDS

These sample pages show how the Dolch words may be arranged to provide timed oral practice in word recognition.

The child reads the words aloud as fast as possible to the teacher or to a pupil tutor. The object is to see how many words can be read in one minute. The hope is that the child will see notable improvement from day 1 to day 6.

The child's score is the number of words read correctly in one minute. Record the child's score each day at the bottom of the page.

If the child makes an error, tell the child the word but do not count it in the score. The teacher might like to circle, underline or check any word(s) the child does not know so they could be learned before the next day's practice.

Dolch short "a" words. How many can you read in one minute?

am	an	and	apple	as	ask	at	back
black	can	cat	fast	grass	had	can	and
hand	has	man	rabbit	ran	thank	cat	apple
that	had	at	hand	back	am	rabbit	as
an	black	has	and	can	man	fast	ran
rabbit	cat	apple	as	fast	ran	ask	grass
thank	grass	ask	as	apple	and	thank	that
an	am	thank	ran	rabbit	man	at	back
has	hand	had	grass	fast	cat	black	can
can	black	back	at	that	hand	cat	fast
back	am	has	an	black	man	grass	that

Score. 1. ______ 2. ______ 3. ______ 4. ______ 5 ______ 6. ______

Dolch short "i" words How many can you read in one minute?

big	sing	pig	big	children	bring	chicken	in
bring	sit	did	drink	bring	fish	hill	is
chicken	six	pick	him	his	chicken	little	it
children	stick	milk	ring	if	his	wish	its
did	thing	if	sing	did	in	wind	kitty
drink	thick	is	it	fish	drink	its	little
fish	which	kitty	little	in	sit	milk	which
hill	wind	with	milk	pick	pig	ring	him
pick	wish	this	sing	is	six	kitty	pig
his	with	it	sit	stick	ring	if	stick
if	big	which	its	think	which	thing	this

Score: 1.____ 2.____ 3____ 4____ 5____ 6.____

Dolch short "u" words. How many can you read in one minute?

but	cut	duck	funny	jump	just	must	much
run	sun	up	us	but	cut	duck	funny
much	jump	but	just	jump	much	must	but
just	run	up	us	sun	must	jump	much
cut	us	must	funny	duck	just	funny	jump
must	but	duck	cut	but	much	cut	must
run	cut	just	but	run	sun	up	us
duck	us	much	duck	but	us	just	much
funny	run	cut	must	funny	jump	duck	funny
sun	jump	duck	run	much	but	must	cut
up	just	funny	duck	us	up	funny	duck

Score 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____

Dolch short "o" words How many can you read in one minute?

box	off	dog	on	got	robin	hot	song
long	stop	not	top	of	off	box	dog
robin	got	song	hot	long	stop	not	top
stop	top	robin	off	song	on	of	not
long	hot	got	dog	box	robin	got	hot
top	stop	robin	on	long	dog	of	song
of	long	dog	robin	not	got	box	stop
on	hot	on	song	of	hot	on	top
long	song	off	stop	box	long	got	long
hot	got	box	top	off	not	robin	dog
song	dog	got	off	box	on	hot	not

Score. 1. ____ 2 ____ 3.____ 4 ____ 5____ 6.____

Dolch short "e" words How many can you read in one minute?

bed	men	went	bell	nest	when	best	went
red	yes	egg	seven	get	ten	help	when
them	let	then	went	when	yes	men	then,
nest	red	seven	ten	them	then	let	them
help	get	egg	best	bell	bed	nest	get
bell	red	best	when	yes	egg	seven	best
ten	get	help	then	let	them	yes	egg
when	went	seven	red	ten	egg	get	let
best	them	let	then	help	men	red	when
nest	bell	bed	best	when	yes	went	then
them	then	when	went	ten	men	best	went

Score 1. ______ 2. ______ 3. ______ 4. ______ 5. ______ 6 ______

Dolch short vowels. Review How many can you read in one minute?

at	big	box	but	men	am	bring	got
am	hill	off	much	went	back	which	robin
had	its	dog	cut	bed	hand	him	hot
that	sing	on	must	when	black	kitty	song
but	nest	has	got	best	can.	bring	red
man	when	his	duck	and	which	got	yes
him	long	stop	egg	seven	apple.	little	not
kitty	sun	jump	cat	sit	top	just	yes
get	rabbit	wish	not	much	ten	help	as
fast	help	if	milk	ran	this	them	ask
did	thing	let	stop	get	with	thank	think.

Score 1 ____ 2 ____ 3. ____ 4. ____ 5 ____ 6 ____

Dolch long vowel words (vowel-consonant-vowel) How many can you read in one minute

ate	make	fire	home	blue	here	baby	those
name	five	open	picture	these	cake	paper	here
like	over	use	came	table	ride	those	white
game	take	time	gave	white	write	these	like
here	use	picture	blue	over	home	those	make
open	white	fire	ride	time	write	like	five
five	take	table	make	game	name	paper	open
made	baby	came	ate	gave	cake	those	name
use	these	here	white	open	name	fire	those
gave	write	make	take	ride	paper	write	like
came	home	use	over	those	like	cake	made

Score 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6. ____

Dolch "Irreguler words" How many can you read in one minute?

any	eight	laugh	only	the	want	walk	once
where	buy	eye	light	pretty	their	could	come
was	who	come	four	live	put	buy	laugh
there	wash	would	could	from	many	where	there
right	they	watch	you	do	give	does	goes
night	said	to	water	your	does	their	they
goes	one	shoe	two	were	done	light	live
have	once	some	walk	that	what	eight	eye
you	your	would	who	where	were	only	once
what	want	was	watch	walk	two	the	they
to	they	the	there	were	many	put	was

Score 1. ______ 2. ______ 3. ______ 4. ______ 5. ______ 6. ______

APPENDIX VC

A BRIEF OUTLINE OF PHONIC AND STRUCTURAL SKILLS

Consonants

s, m, t, h, b, j, r, n, k

c, g, d, f, l, w, y, v, z, x, qu

Always teach letter name, letter sound and correct letter formation.

Be sure the child sorts out the difference between b-d, b-p, p-q; m-n; t-d; g-j; and c-s;

Teaching (sing, bang, etc.), nk (think, bank, etc.)

Vowels

Short vowel sounds a, i, o, u and last of all e.

Teach the child to listen for the slight shades of difference in the sounds of a, i and e, as in p_a_n, p_i_n and p_e_n, and the difference between o and u as in h_o_t and h_u_t.

Consonant Digraphs

sh, ch, th, wh

Be sure the child can distinguish between sh and ch as in _sh_op and _ch_op and between wh and w as in _wh_ip and _w_it.

Consonant Blends

tr, fr, br, cr, dr, gr

pl, cl, sl, bl, fl, gl

sm, st, sp, sn, sk

sw, tw

str, spr, shr, thr, squ

Long Vowel Sounds: The use of _e_ to make a vowel long.

mat-mate, rid-ride, not-note, cut-cute

The long and short sounds of vowel y.

- prepared by Margaret R. Hill

Vowel Digraphs: ai, ay, oa, ea, ee, oi, ay

R Control: ar, er, ir, ur and or

Short and Long Double Vowels:

oo - look, moon

ea - head, leaf

Use of u and w:

au (Paul, fault), aw (draw, paw), ou (out, loud),
ow (cow, flow), ue (blue, true), ew (blew, new).

Silent Letters:

kn, gn, pn, gh, wr, sc, mb (comb, limb), bt (debt), and gh as in igh, ight

Soft c and g:

The effect of e, i and y on c and g as in cent, city, cycle and gem, ginger, gym.

Irregular Sounds:

ph-gh (f) as in phone, rough

ough as in though, ought

augh as in caught

ould as in could, would

ei as in weigh, eight

STRUCTURAL DEVICES

1. Adding s, es, ed, d, t, ing to regular words and to words ending in "e".
2. Contractions e.g. he's, can't, they'll, we're, etc.
3. Plural of words ending in y - candy, candies; boy, boys.

4. Plural of words ending in sh, ch, s, x and z.
   Add es - brush, brushes; tax, taxes; dress, dresses.
5. Plural of words ending in f or fe, knife, knives; scarf, scarves.
6. Doubling the final consonant before adding an ending to a word with a short vowel, hop, hopping, hopped; big bigger, biggest.
7. Compound words.
8. Syllabication - Basic principle that the number of syllables depends on the number of sounding vowels in the word.
9. Use of prefixes an, in, en, de, dis, pro, pre, con, ex, re, etc.
10. Use of suffixes ly, tion, ive, ment, less, al, able, ance, ful, ness, ous, etc.

REMEDIAL READING CHECK LIST OF SKILLS

Name ______________________ Age _____ Grade ____ School ____________

Check off items that are already known and succeeding ones as they are mastered.

Phonics: Comments

Consonants:

t s m h b j p r n k c g d f l w y

v z x

qu soft c and g followed by e, i, y (cent, gem)

Consonant digraphs:

th, ch, sh, wh, ng, ph(f), gh(f)

Silent letters:

wr, kn, gn, pn, sc, gh (light), mb (comb),

bt (debt), t (Patch, castle)

Short vowels:

a i o u e

plus r - ar ir er ur or

plus u or w - au, aw; ou, ow; ew

Long vowels:

a i o u e (vowel plus silent e)

y as a vowel - funny, my

final vowel in one-syllable words - he, go, cry

Vowel digraphs:

ay, ai, ea, ee, ie, oe, oa, ey, eo, ui, ea, (head)

- prepared by Margaret R. Hill

Comments

Vowel diphthongs:

oi, oy, oo (book, moon)

Irregular sounds:

ough-though, ought; ould-would; augh-caught;

ei-eight

Word Recognition:

Basic Sight Words	Can Recognize	Can Spell
50		
100		
150		
200		
250		
300		

Language Structure:

Addition of s, es, ed, ing

a) to regular words

b) to words ending in 'e'

c) when single consonant follows a short vowel (hop, hopped)

Plurals - words ending in s, sh, ch, x - add es

- words ending in y preceded by a consonant (baby, babies)
- words ending in y preceded by a vowel (day, days)
- words ending in f or fe

Comments

Contractions - I'm, I'll, I've, it's, isn't, won't, don't, can't, doesn't, we're, you're they're, we've, they've, he's, let's, wouldn't

Compound words - upon, into, afternoon, postage, etc.

Syllabication - number of syllables depends on the number of vowels heard in a word.

- recognition of syllables as word parts

Prefixes - an, en, ex, de, dis, in, im, con, mis, pro, per, re, etc.

Suffixes - y, ly, ful, less, ness, ment, er, est, able, ance, ant, ive, ic, ish, ous, ion

Punctuation - capital, period, comma; question, quotation and exclamation marks; italics, parenthesis

Homonyms - there-their; were-wear; rode-road; to-too-two; etc.

Dictionary Skills:

Alphabetical order to the first, second, third and fourth letters.

Location in dictionary - middle, first and last quaters.

Use of guide words.

Spelling, pronunciation and word meaning.

APPENDIX VI

DENT SPELLER (GRADE 3)

REARRANGED ACCORDING TO PHONIC ELEMENTS AND GENERALIZATIONS

DENT SPELLER - GRADE 3 (1959 EDITION)

The words from this edition have been arranged according to phonic elements and generalizations to show how spelling and phonics can be integrated.

I Short vowels

a

bad
sand
pass
lap
tan
snap
ant
bat
bag
grab
rag
cap
mad
at
can
glass
class
man
hands
stand
stamp
grass
glad
flag
candy
badly
basket
any
across
family
wagon

e

sled
pen
step
leg
led
yet
west
went
rest
wet
sent
pet
red
bed
held
send
egg
hen
nest
eggs
test
dress
men
best
left
help

i

ink
swim
hit
twin
skip
fix
kiss
fit
wind
pig
trip
bit
win
miss

o

drop
lost
got
dog
lot
spot
log
pond
soft
frog
hop
not
God
box
from
off
son
often

u

must
hut
mud
rub
gum
tub
plum
nut
just
dust
us
drum
cups
hunt
jump
uncle
until

Irregular words
push
put

---

prepared by Margaret R. Hill

V Words with 'r' control

ar	er	ir	or	ur
barn	cover	first	corn	hurt
garden	mother	third	world	turn
start	her	bird	north	church
arm	never	girl	work	
dark	very	girls	for	
card	winter			
far	father			
car	other			
warm	sister			
part	brother			
park	every			
bark	another			
farmer	after			
party	river			

VI Words with 'll'

all	ell	ill	oll	ull
fall	spell	hill	roll	full
small	bell	still	doll	pull
shall	well	kill		
tall				
hall				
call				
ball				

IX Words with double vowels

ai	ay	ee	ea	oa	ie	ey	eo
rain	day	seeds	clean	road	pie	money	people
train	hay	bee	cream	coal	flies		
paint	pay	deep	east	coat			
fair	play	queen	seat				
tail	away	sweet	hear				
air	birthday	week	reading				
rainy	always	seen	reader				
afraid	today	peep	please				
hair		been	near				
mail		feet	each				
pair		teeth	dear				
chair		green	eat				
again		wheel	meat				
		asleep	teacher				

Irregular words

said	bread	early
friend	head	bear
they	ready	great
their	learn	
	wear	

Special words

boy boys toy buy

X Words with aw, au; ow, ou

saw	aunt	brown	mouth
draw		town	found
		down	out
		now	south
		how	ground
		flowers	our
			house
			about

Irregular words

you	your	country
four	colour	

XV Words with wa

was
want
wanting
warm
walk
walking

water
wash
washing
washes
washed

XVI Words with oo as in book and as in moon

cook
book
looked
good

stood
woods
floor

boot
moon
noon
too

food
cool
stool
school
roof

XVII Words with soft c (c before e, i, y sound like /s/)

face
race
place

ice
nice

cent
city
pencil

once

XVIII Words with soft j (j before e, i, y sounds like /j/)

page
cage

large

orange

XIX Plurals of words ending in s, x, sh, ch (add es)

dish	dishes
dress	dresses

XX Compound words

birthday
anything
something
nothing

inside
outside
before
behind

afternoon
forget
cannot
without

another

XII **Contractions and abbreviations**

Mr. Mrs. can't isn't it's don't what's

XXII **Words requiring capitals**

Monday Friday Santa Claus Christmas

APPENDIX VII

TOOLS FOR TEACHING HANDWRITING

A. Suggestion for Improving Handwriting

B. Handwriting Exercises

APPENDIX VIIA

SUGGESTIONS FOR IMPROVING HANDWRITING

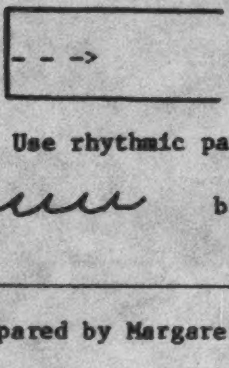
The purpose of teaching handwriting is "to enable every child to write as well as he is able to at a reasonable speed". The Teaching of Reading and Writing. Wm. S. Gray, pages 191-192.

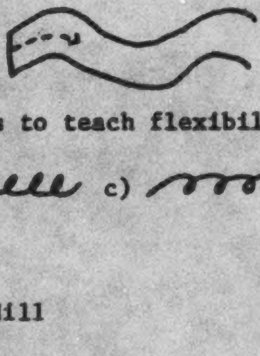
1. Preparatory exercises to improve motor skill, necessary for writing, include cutting, pasting, modelling, painting, drawing, outlining, colouring, tracing, templates or stencils, dot-to-dot activity books.

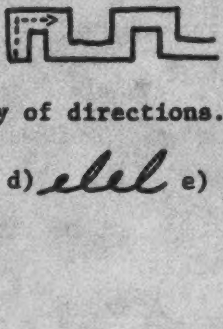
2. Proceed from gross to fine motor patterns. Beginning patterns should be large--gradually reduce size.

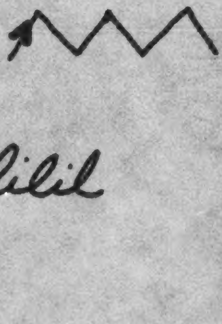
3. Check proper grasp of pencil, position of paper on the desk as well as arm position. Only the elbow of the writing arm should be off the desk.

4. Draw roads or follow mazes to gradually confine the child's movements to smaller and smaller space until he is able to trace a line.

a)


b)


c)


d)


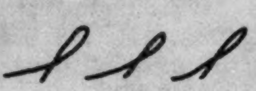
5. Use rhythmic patterns to teach flexibility of directions.

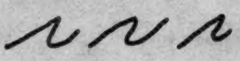
a) uuu b) eeeee c) ooo d) elel e) lilil

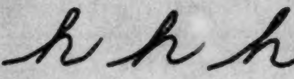
---

prepared by Margaret R. Hill

6. In teaching letter formation, teach first the separate movement patterns, (a, b) gradually working them together to form the letter (c). e.g. for the letter h the movement patterns might be

a) 

b) 

c) 

7. Have the child trace the letter pattern with index finger on the chalkboard, in the air, on the desk, the teacher's sample in his book, then have him write it.

8. Often verbal structuring of the movement patterns helps children, e.g. for the letter i verbal structuring might be "up-down-up-dot".

9. Reinforce the movement patterns by repetition. Writing patterns must become automatic, thus freeing the child to think about his ideas, instead of having to concentrate on how to make the letters.

10. Use the printing or writing lesson to review the letter sound. Say the letter sound as he traces and writes.

11. Always teach how letters are joined, to avoid problems with combinations such as on, or, om, ot, br, bi, bu, etc.

12. Teach children how to copy from the chalkboard. Encourage the child to look at the word, say it to himself, remember it by sounding, then write it without having to look back for each letter. When he has learned to cope with two- or three-letter words, gradually try to increase the memory span for words, encourage the child to use the sounds to help him remember the letters and their order in words.

13. For the child who is totally unable to complete seatwork from the chalkboard, prepare work for him on a work sheet, or in his book, or require brief answers only, so that he will have an opportunity to provide the answers without being penalized because of poor copying ability. When he has completed one- or two-word answers, then have him copy from the chalkboard as much as he can, so that he may have the copying practice, which he needs.

14. Teach the child to move his book to the top of his desk, as his writing nears the bottom of the page. If more than his elbow is off the desk, he does not have proper support and control of his arm.

15. The teacher should be an active participant in every printing or writing lesson, always checking while the child prints or writes to be sure of correct movement patterns.

APPENDIX VIIB

HANDWRITING EXERCISES

TO THE TEACHER

Teachers are expressing concern over the number of children who can not complete written assignments. A major factor in written language is handwriting. Until handwriting becomes automatic, the child is not free to concentrate entirely on what he wants to write. Handwriting is a skill and like any other skill needs to be practised. These practice pages have been prepared to provide material for regular handwriting practice for the child who has this difficulty. Letters are grouped according to similarity in the basic pattern. Capitals are not used because exercises have not been provided for the practice of capital letters.

Prior to using the practice page the teacher should demonstrate the steps in the correct movement pattern. Having the child trace in the air, on the blackboard or on his desk would be necessary activities before using the practice page. It is advisable to remind a child that 'up' lines are curved while all 'down' strokes, although slanted, come straight down to the line (ℓ not ℓ). Every letter should be finished off with an 'up' sweep (ℓ not ℓ).

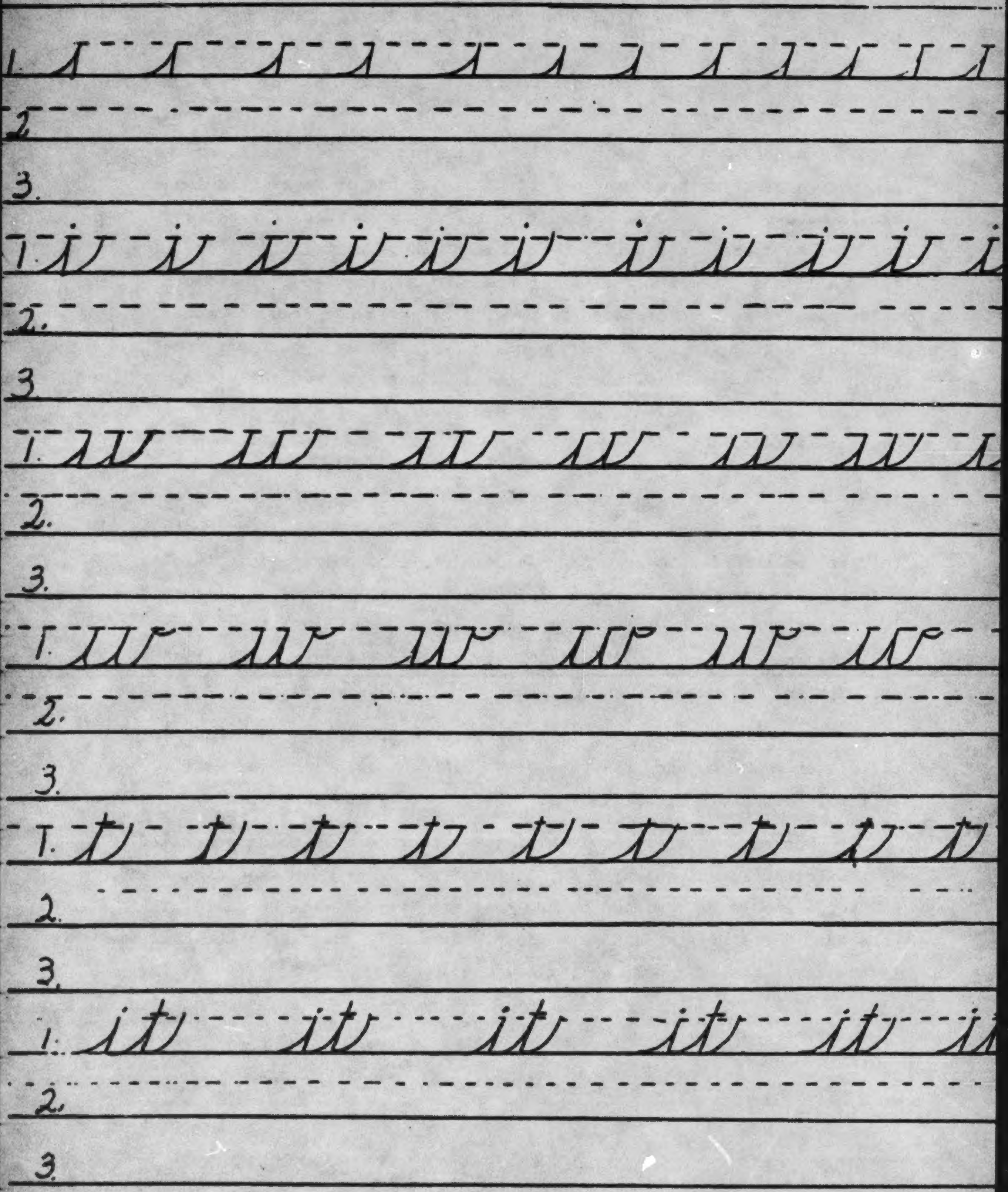
The method of use is very simple. Have the child trace the sample #1, then do the same exercise at #2 with the guideline for small letters, then repeat it at #3 where there is no guideline.

Phonics may be reviewed while the letter form is being practised. As the letter form is being made, have the child say it's associated sound. All words should be reviewed before they are written, so the child will know what he is writing. Some words are difficult and may not be familiar to the child (lull, quote, vox, vile, etc.)

Prepared by,

Margaret Hill   Grades 3 & 4

Practice Page for i, u, w, t


1.
2.
3.
1.
2.
3.
1.
2.
3.
1.
2.
3.
1.
2.
3.
1. it it it it it i
2.
3.

Practice Page e l

1. l l l l l l l l l

2.

3.

1. l l l l l l l l l

2.

3

1. l l l l l l l l l

2.

3.

1. l l l l l l l l l

2.

3.

1. let let let let let

2.

3.

1. lit lit lit lit lit

2.

3.

Review i u w t e l

i u w t e l

tell tell tell tell

little little little little

2.

3.

1. we we we we we

2.

3.

1. will will will will

2.

3.

1. wilt wilt wilt wilt

2.

3.

Practice Page b bi bu be bl

b b b b b b b b

2

3.

b b b b b b b b

2.

3

1. bi bi bi bi bi bi

2.

3.

1. bu bu bu bu bu

2.

3.

1. be be be be be

2

3.

1. bl bl bl bl bl

2.

3.

Practice Page b bi bu be bl

1. b b b b b b b b
2.
3.

1. bit bit bit bit bit
2.
3.

1. bat bat bat bat
2.
3.

1. bell bell bell bell
2.
3.

1. bible bible bible
2.
3.

1. blue blue blue
2.
3.

Practice Page o c a d

1. o o o o o o o o
2.
3.

1. c c c c c c c c
2.
3.

1. a a a a a a a a
2.
3.

1. d d d d d d d
2.
3.

1. cat cat cat cat
2.
3.

1. dad dad dad
2.
3.

Practice Page oo oa oc oe ol

1. o o o o o o o o
2.
3.

1. oo oo oo oo oo oo
2.
3.

1. oa oa oa oa oa
2.
3.

1. oc oc oc oc oc
2.
3.

1. oe oe oe oe oe
2.
3.

1. ol ol ol ol ol
2.
3.

Practice Page oi ou ow ot od ob

1. oi oi oi oi oi oi
2.
3.

1. ou ou ou ou ou
2.
3

1. ow ow ow ow ow
2.
3.

1. ot ot ot ot ot ot
2.
3.

1. od od od od od
2.
3.

1. ob ob ob ob ob
2.
3.

Review Page - joining 'o'

tool tool tool tool

2.

3.

1. coat coat coat coat

2.

3.

1. doc doc doc doc

2.

3.

1. toe toe toe toe

2.

3.

1. bold bold bold bold

2.

3.

1. bob bob bob bob

2.

3.

Review Page - joining 'o'

1. coil coil coil coil

2.

3.

1. toad toad toad toad

2.

3

1. towel towel towel

2.

3.

1. boot boot boot boot

2.

3.

1. cod cod cod cod

2.

3.

1. loud bold bob

2.

3.

Practice Page ij uy ag

1. i i i i i i i i
2.
3.

1. j j j j j j j j j
2.
3.

1. u u u u u u u
2.
3.

1. y y y y y y y y
2.
3.

1. a a a a a a a a
2.
3.

1. g g g g g g g g
2.
3.

Practice Page j y g

1. jet jet jet jet jet
2.
3.

1. job job job job job
2.
3.

1. you you you you
2.
3.

1. yell yell yell yell
2.
3.

1. got got got got
2.
3.

1. goal goal goal goal
2.
3.

Practice Page f q

1. f f f f f f f f f f
2.
3.

1. f f f f f f f f f
2.
3.

1. if if if if if if
2.
3.

1. a a a a a a a a
2.
3.

1. q q q q q q q q
2.
3.

1. quit quit quit quit
2.
3.

Practice Page f q

fat fat fat fat fat

fill fill fill fill

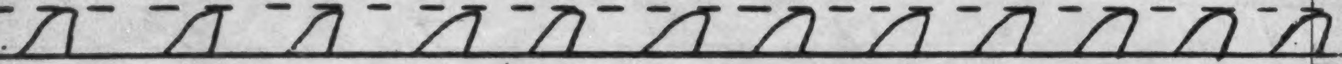
1. foot foot foot foot
2.
3.

1. quilt quilt quilt
2.
3.

1. quiet quiet quiet
2.
3.

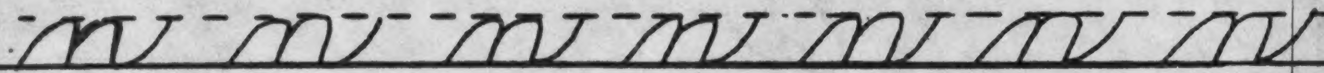
1. quote quote quote
2.
3.

Practice Page n m v x z

1.


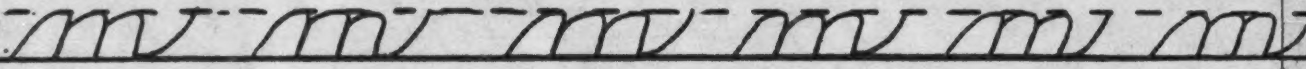
2.

3.

1.


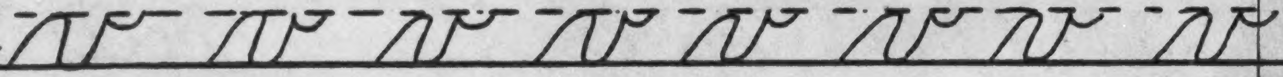
2.

3.

1.


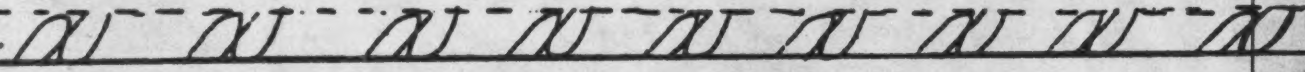
2.

3.

1.


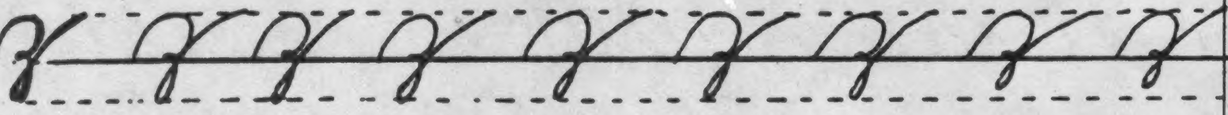
2.

3.

1.


2.

3.

1.


2.

3.

Practice Page n m v x z

1. man man man
2.
3.

1. mint mint mint
2.
3.

1. meat meat meat
2.
3.

1. van van van van
2.
3.

1. vex vex vex vex
2.
3.

1. zoo zoo zoo zoo
2.
3.

Practice Page 'joining 'o'

on on on on on

2.

3.

1. om om om om om

2.

3

1. ov ov ov ov ov

2.

3.

1. ow ow ow ow ow ow

2.

3.

1. oz oz oz oz oz oz

2.

3.

1. oy oy oy oy oy oy

2.

3.

Practice Page joining 'o'

1. fond fond fond
2.
3.
1. comet comet comet
2.
3.
1. love love love love
2.
3.
1. oven oven oven oven
2.
3.
1. ozzie ozzie ozzie
2.
3.
1. boy boy boy boy
2.
3.

Review Page joining b v w

ba be bi bo bu

2.

3.

1. bat bem bilt bog

2.

3

1. va ve vi vo vy

2.

3.

1. vam vite volley

2.

3.

1. wa we wi wo wl

2.

3.

1. wax well wow owl

2.

3.

Practice Page h k

l l l l l l l l l l

h h h h h h h

he he he he he he

2.

3.

1. k k k k k k k

2.

3.

1. kid kid kid kid

2.

3.

1. hike hike hike hike

2.

3.

Practice Page r s

1. r r r r r r r r
2.
3.

1. er er er er er er er
2.
3.

1. jerk jerk jerk jerk
2.
3.

1. s s s s s s s
2.
3.

1. is is is is is is
2.
3.

1. first first first first
2.
3.

Practice Page joining 'r'

1. or or or or or or
2.
3.

1. wr wr wr wr wr
2.
3.

1. br br br br br br
2.
3.

1. cork cork cork cork
2.
3.

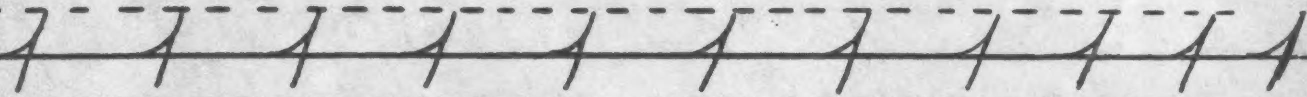
1. wreck wreck wreck
2.
3.

1. broke broke broke
2.
3.

Practice Page joining 's'

1. os os os os os os
2.
3.
1. us us us us us
2.
3.
1. bs bs bs bs bs
2.
3.
1. boss boss boss
2.
3.
1. cous cous cous
2.
3.
1. robs robs robs
2.
3.

Practice Page p



1.
2.
3.

1. p p p p p p p p
2.
3.

1. pa pa pa pa pa
2.
3.

1. play play play play
2.
3.

1. pram pram pram
2.
3.

1. peeps peeps peeps
2.
3.

Review Page p

1. pop pop pop pop
2.
3.

1. hope hope hope hope
2.
3.

1. scope scope scope
2.
3.

1. spoof spoof spoof
2.
3.

1. troops troops troops
2.
3.

1. scoop scoop scoop
2.
3.

Review i j t u w y

i j t u w y

2.

3.

1. it will be juicy

2.

3.

1. we judge you

2.

3.

1. jingle jangle jungle

2.

3.

1. jump to the water

2.

3.

1. we will run west

2.

3.

Review e l b h k f

1. eeee lll bbb hhh
2.
3.

1. kkk fff bl be bf
2.
3.

1. every little boy has
2.
3.

1. fun at the beach.
2.
3.

1. flying kites is fun
2.
3.

1. for all five kids
2.
3.

Review o c a d g q

1. oo ccc aaaa
2.
3.

1. ddddd ggg qqqq
2.
3.

1. on a cold day we
2.
3.

1. can not camp out
2.
3.

1. dad walks the dog
2.
3.

1. very quickly.
2.
3.

Review m n v x z

1. m m m n n n v v
2.
3.

1. x x x x z z z z
2.
3.

1. not many men
2.
3.

1. wear violet vests.
2.
3.

1. six bees buzz at
2.
3.

1. the zoo in the valley.
2.
3.

Review p r s

1. p p p r r r s s s
2.
3.

1. pr pr pr ps ps ps
2.
3.

1. pups play on rugs
2.
3.

1. prince is a pretty
2.
3.

1. name for a prize
2.
3.

1. pinto pony
2.
3.

1. a b c d e f g h

2.

3.

1. i j k l m n

2.

3.

1. o p q r s t u

2.

3.

1. v w x y z

2.

3.

1. 0 1 2 3 4 5 6 7 8 9

2.

3.

1. 0 1 2 3 4 5 6 7 8 9

2.

3.

APPENDIX VIII

TOOLS FOR TEACHING MATHEMATICS

A. The Tachistoscope

B. Pupil Reference Cards

   1. Addition or Subtraction

   2. Multiplication or Division

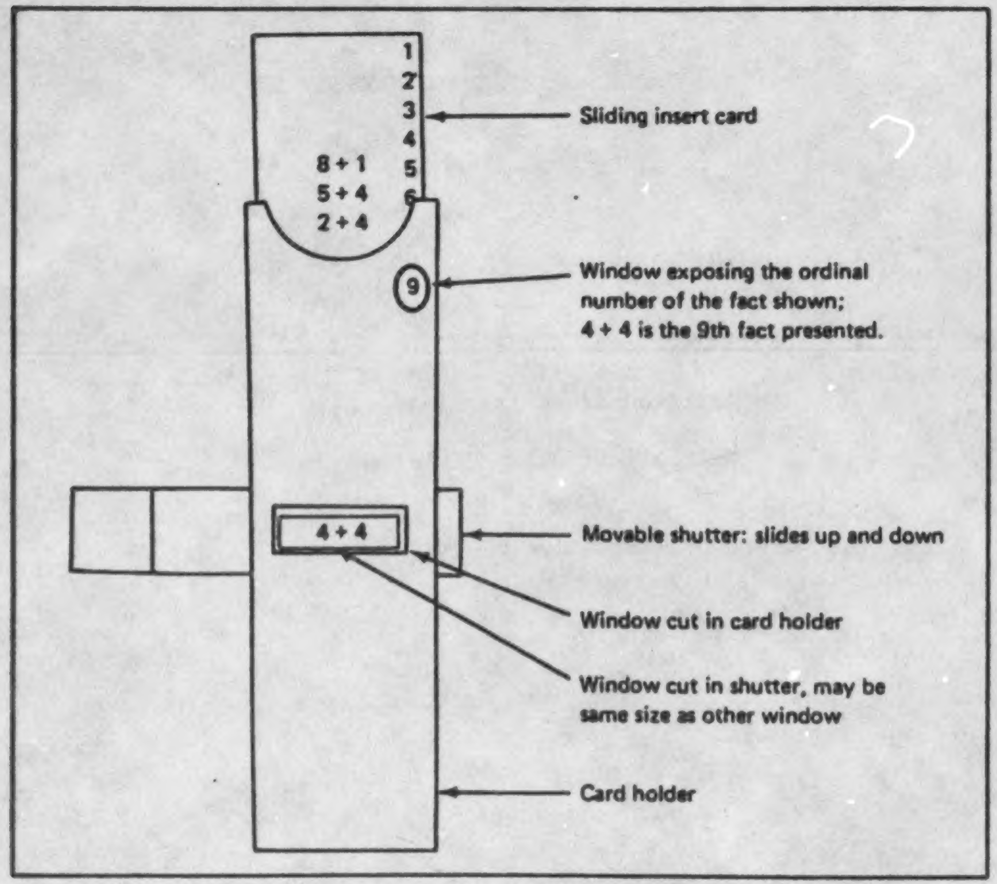
C. Timed Oral Practice Sheets

D. Addition Chart

APPENDIX VIIIA

THE TACHISTOSCOPE

Diagnosing difficulties in basic math facts


1
2
3
4
5
6
8 + 1
5 + 4
2 + 4
Sliding insert card
9
Window exposing the ordinal number of the fact shown; 4 + 4 is the 9th fact presented.
4 + 4
Movable shutter: slides up and down
Window cut in card holder
Window cut in shutter, may be same size as other window
Card holder

Dunlop, W.P. and Thompson, C.S., Journal of Learning Disabilities, November, 1977.

The tachistoscope, as illustrated, may be constructed from a report card cover or other rigid paper. The facts to be presented are placed on separate cards to be inserted into the card holder. One insert card might have addition facts, another subtraction facts, another multiplication, and another division.

The teacher's record sheet has the same sets of facts in the same order but beside tham are columns headed 'Flash' and 'Analysis'. If the child responds within 5 seconds to the basic fact, it is checked in the flash column. If the child is unable to respond correctly, a minus sign is recorded in the flash column and the basic fact is exposed for analysis. During the time the child is determining the answer, the teacher takes note of how the child arrives at the solution and makes comments to that effect.

Answer Sheet

	Flash	Analysis	Comments
8 + 1	____	________	__________
5 + 4	____	________	__________
2 + 4	____	________	__________

APPENDIX VIIIB

PUPIL REFERENCE CARD

1. Addition and Subtraction

(Numbers in top column should be in red)

(Numbers in first vertical column should be in green)

0	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

To add:

Example 8 + 5 =	Put right index finger on the red 8 (top) and your left index finger on the green 5 (side). Slide your right finger down the 8 column as you slide your left finger across the 5 row until they meet. They meet at 13. So 8 + 5 = 13.

To subtract:

Example 15 - 8 =	Put right index finger on the red 8 (top) and slide it down the column until you come to 15. Look across that row to the green number at the left (7). So 15 - 8 = 7.

---

prepared by Margaret R. Hill

APPENDIX VIIIB

PUPIL REFERENCE CARD

2. Multiplication or Division

(Numbers in top column should be in red)

(Numbers in first vertical column should be in green)

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

To multiply:

Example 6 x 7 = Put right index finger on red 6 (top) and left index finger on green 7 (side). Slide your right index finger down the 6 column as you slide your left finger across the 7 row. Where the two meet is the answer (42). So 6 x 7 = 42.

To divide:

Example 56 - 8 = Put your right index finger on the red 8 (top) and slide your finger down that column until you come to 56. Look across that row to the green number at the left side (7). So 56 - 8 = 7.

---

prepared by Margaret R. Hill

APPENDIX VIIIC

TIMED ORAL PRACTICE SHEETS

Addition facts to 10
Addition facts above 10.

The child says aloud the sum for each fact while the teacher or a pupil tutor times.

The score is the number of correct responses in one minute. Record the score at the bottom of the page.

If the child makes an error tell the child the correct answer but do not count it in the score. A teacher may wish to circle, underline or check any fact which the child has had wrong, so it may be learned before the next day's practice.

---

prepared by Margaret R. Hill

Timed oral practice sheets Addition Facts to 10 Margaret R. Hill

Name ____________________ Date ____________________

	1	4	4	7	6	8	6	5	4	5	3	2	7	5
1.	1	4	1	2	4	1	2	5	3	3	1	2	3	2
	7	6	4	7	1	5	4	2	5	3	7	5	9	6
2.	2	1	4	3	1	2	1	2	5	1	1	4	1	3
	4	9	7	5	4	5	5	6	3	6	8	5	8	2
3	3	1	1	3	1	4	1	2	3	4	1	2	2	2
	6	6	7	4	1	7	8	3	3	5	7	5	5	6
4	3	1	3	2	1	2	2	1	2	5	1	4	1	3
	3	3	6	8	5	2	4	3	6	8	1	6	9	4
5.	3	2	4	1	3	2	3	2	1	2	1	2	1	4

Score 1. ____ 2. ____ 3 ____ 4 ____ 5. ____ 6. ____ 7 ____

Name-__________________________ Addition Facts (above 10.)

1.	6	8	6	4	8	7	6	4	7	9	5	9	7	9
	5	6	6	9	3	5	7	8	4	6	9	3	7	2
2.	8	4	8	9	9	5	9	6	5	3	8	5	3	6
	5	8	7	8	7	6	4	8	7	9	9	8	8	9
3.	6	2	4	8	4	5	8	8	7	7	8	7	5	9
	7	9	7	6	9	7	8	9	9	6	3	8	9	4
4.	8	7	9	5	8	9	9	3	6	7	5	9	6	8
	7	4	5	6	4	9	3	8	9	6	8	7	6	4
5.	7	9	9	8	10	3	9	4	6	8	7	2	7	6
	9	2	8	5	10	9	6	7	8	8	5	9	8	5

473

474

Score 1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____

How many can you say in one minute?

APPENDIX VIIID

ADDITION CHART

Example of a wall chart to reinforce the operation of addition.

ADD:

$$\begin{array}{r}46\\325\\13\\\underline{489}\end{array}$$

Start at the arrow

$$\begin{array}{r}46\\325\\13\\\underline{489}\\3\end{array}$$

Step 1

Add down the ones column.

6 + 5 + 3 + 9 = 23 ones (2 tens, 3 ones)

Step 2

Put the 3 (ones) under the ones column. Carry the 2 (tens) to the top of the tens column.

$$\begin{array}{r}46\\325\\13\\\underline{489}\\73\end{array}$$

Step 3

Add down the tens column. Don't forget the 2 you carried.

2 + 4 + 2 + 1 + 8 = 17 (tens)

Step 4

Put the 7 under the tens column. Carry the 1 to the top of the hundreds column.

$$\begin{array}{r}46\\325\\13\\\underline{489}\\873\end{array}$$

Step 5

Add down the hundreds column. Don't forget the 1 you carried.

1 + 3 + 4 = 8 (hundreds)

Step 6

Put the 8 under the hundreds column.

THE SUM IS 873.

To prove your answer add upwards starting at the row with the arrow.

prepared by Margaret R. Hill

LIST OF TESTS

The following list of tests includes currently used diagnostic and achievement tests for group and individual administration. Many do not require specialized training, while others are reserved for psychometrists or qualified psychological examiners.

Publishers or Distributors of tests listed:

California Test Bureau, Del Monte Research Park, Monterey, California, 93940.
Charles E. Merrill, 1300 Alum Creek Drive, Columbus, Ohio, 43216.
C.H. Nevins Printing Co., 311 Bryn Mowr Island, Bradenton, Florida, 33505.
Consulting Psychologists Press, Palo Alto, California, 94306.
Educational Testing Service, Princeton, New Jersey, 08540.
Educator's Publishing Service, 75 Moulton Street, Cambridge, Mass., 02138.
Essay Press, Planetarium Station, New York, N.Y., 10024.
Fearon Publishers, Belmont, California, 94002.
Follett Educational Corporation, 1010 W. Washington Blvd., Chicago, Ill., 60607.
Guidance Centre, 1000 Youge Street, Toronto, Ontario, M4W 2K8.
Harcourt Brace Jovanovich, 757 Third Avenue, New York, N.Y., 10017.
Houghton-Mifflin Co., 1 Beacon Street, Boston, Mass., 02107.
Language Research Associates, Palm Springs, California, 92262.
Psycan Limited, 255 Consumers Road, Willowdale, Ontario, M2J 1R3.
Psychological Corporation, 304 E 45 Street, New York, N.Y., 10017.
Science Research Associates, 707 Gordon Baker Road, Willowdale, Ont., M2H 2S6.
Slosson Educational Publishers, 140 Pine Street East, Aurora, N.Y., 14052.
Teachers College Press, Columbia University, New York, N.Y., 10027.
University of Illinois Press, Urbana, Illinois, 61801.
University of Iowa Bureau of Research and Service.

---

prepared by Margaret R. Hill

TESTS

Basic School Skills Inventory - Follett. Identifies areas of difficulty in school performance of children aged 4 to 7 years.

Bender Visual Motor Gestalt Test. Guidance Centre. A diagnostic test of visual motor gestalt function in children.

Boehm Test of Basic Concepts. Guidance Centre. A diagnostic test of understanding concepts which can be administered to groups of children ages 5 to 6.

Botel Reading Inventory - Follett. A group of tests to determine a wide variety of reading skills.

Circus: Comprehensive Assessment in Nursery School and Kindergarten. Educational Testing Service. A screening instrument for preschool children who may have potential learning problems.

Detroit Tests of Learning Aptitude. Guidance Centre. An individually administered test containing 19 subtests, measuring reasoning, memory, motor and language functioning.

Developmental Test of Visual Motor Integration (Beery) - Follett. A visual-motor test of ability to copy designs (ages 2-14).

Developmental Test of Visual Perception (Frostig). Guidance Centre. A test measuring fine separate areas of visual perception - eye motor coordination, figure-ground perception, form constancy, position in space and spatial relationships.

Durrell Analysis of Reading Difficulty. Guidance Centre. A battery of tests to analyse and evaluate reading ability, including oral and silent reading, word recognition, phonics, visual memory.

Gates - MacGinitie Readiness Skills Test. Teacher's College Press. A list of pre-grade 1 skills for end of kindergarten or beginning of grade 1.

Gates - MacGinitie Reading Tests. Teacher's College Press. Tests of silent reading, measuring vocabulary and comprehension at five different levels (A, B, C, D, E) appropriate for grades 1 to 9.

---

prepared by Margaret R. Hill

Gilmore Oral Reading Test. Guidance Centre. An oral reading test to be administered individually. Comes in two forms, C and D, each measuring accuracy, comprehension and rate of reading.

Goldman-Fristoe-Woodcock Auditory Skills Test Battery. Psycan Limited. A test battery including 12 tests designed to measure auditory skills (attention, discrimination, memory and sound-symbol tests) in subjects aged 3 years up to and including adults).

Goodenough-Harris Drawing Test. Guidance Centre. A nonverbal test providing a measure of mental ability through the scoring of a child's drawing of a man, a woman and of self.

Gray Oral Reading Tests. Guidance Centre. An individually administered oral reading test for grades 1-12 in four parallel forms, A, B, C, D. Grade level is dependent on accuracy and rate of reading.

Gray Standardized Oral Reading Paragraphs. Guidance Centre. An individually administered oral reading test consisting of a series of paragraphs of increasing difficulty appropriate for grades 1-8. Grade level dependent on accuracy and rate of reading.

Group Diagnostic Reading Aptitude and Achievement Tests (Intermediate Form) C.H. Nevins. A battery of tests for grades 3 to 9 assessing reading comprehension, reading rate, reversals, addition and omissions, spelling, arithmetic, visual and auditory memory and motor speed.

Harris Test of Lateral Dominance. Psychological Corporation. A series of tests to show right and left preference of hand, eye and foot.

Illinois Test of Psycholinguistic Abilities. University of Illinois Press. A battery of twelve subtests providing information about a child's receptive and expressive auditory, visual and motor skills.

Key Math Diagnostic Arithmetic Test. Psycan Limited. An individually administered test covering three basic areas - content, operations, applications - appropriate for preschool through sixth grade.

Lee Clark Reading Readiness Test. California Test Bureau. A test of skills to determine readiness for grade 1.

Metropolitan Readiness Tests. Guidance Centre. In two editions - 1965 and 1976 - for use with kindergarten or beginning first grade children. 1965 edition comes in two forms A and B of equal difficulty. The 1976 edition comes in two forms P and Q with two levels for each form. Level 1 for use in kindergarten or with slow students at the beginning of grade 1. Level II is intended for use at the end of kindergarten or the first few weeks of grade 1.

Metropolitan Achievement Tests. Guidance Centre. A complete battery of tests evaluating word knowledge, reading word analysis, language, spelling and mathematics (computation, concepts and problem solving). Available at different levels appropriate for specific grade levels (Primary K-1-4, Primary 1-6-2-4 etc).

Otis-Lennon Mental Ability Tests. Guidance Centre. A group test for assessing general mental ability or scholastic aptitude for subjects ranging from kindergarten to adult. Available in two froms, J and K, and at levels appropriate for specific grades from kindergarten to adult.

Otis-Quick-Scoring Mental Ability Tests. Alpha Short Form. Guidance Centre. A group test for assessing mental ability of subjects in grades 1-4.

Peabody Individual Achievement Test. (P.I.A.T.). Psycan. A test of achievement in the areas of mathematics, reading recognition, reading comprehension, spelling and general information, appropriate from kindergarten to adult. Individually administered.

Peabody Picture Vocabulary Test (P.P.V.T.). Psycan. An individually administered test providing mental age, intelligence quatients and percentiles based on a child's hearing vocabulary as shown in ability to identify specific pictures for the words spoken by the examiner.

Primary Aptitude Tests. Houghton-Mifflin. A group administered test for children aged 6-9 which provides information on a child's visual, auditory, motor and language functioning.

Primary Readiness Profiles. Houghton-Mifflin. A test for end of kindergarten or early grade 1 to assess a child's development in the basic readiness skills.

Purdue Perceptual Survey. Charles E. Merrill. A series of tests for assessing motor development and specific motor skills.

Roswell-Chall Auditory Blending Test. Essay Press. An individually administered test assessing the ability to hear and blend sounds.

Slingerland Screening Tests for Identifying Children with Specific Language Disability. Educators Publishing Tests. Group tests in four forms (A for Grade I, B for Grade II, C for Grade III and IV and D for Grades V and VI) for evaluating visual-motor coordination, visual memory, visual discrimination, auditory - visual discrimination and auditory-motor memory.

Slingerland Pre-Reading Screening Procedures. Educators Publishing Service. A group test for end of kindergarten or early first grade to identify strengths and/or weaknesses in auditory, visual and kinesthetic modality.

Slosson Intelligence Test. Slosson Educational Publications. A short individual screening test of intelligence for use by teachers and other professionals to provide a quick estimate of mental ability.

Spache Diagnostic Reading Scales. California Test Bureau. An individually administered battery of tests for diagnosing reading difficulties through vocabulary, oral and silent reading.

Specific Language Disability. Educators Publishing Service. A battery of tests for identifying specific language disability in students in grades 6, 7 and 8, which may be used for group or individual administration.

S.R.A. Primary Mental Abilities Tests. Science Research Associates. Group test designed to measure mental ability through subtests of verbal meaning, number facility, perceptual speed and spatial relations for subjects from kindergarten to adult.

Stanford Achievement Tests. Guidance Centre. Comprehensive batteries of tests in reading and mathematics and spelling with levels ranging from grade 1 to middle grade 9.

Stanford-Binet Intelligence Scale. Houghton-Mifflin Co. An individual test of intelligence for subjects ranging in age from 2 years to adult for administration by trained psychological examiners.

Stanford Diagnostic Arethmetic Test. Guidance Centre. Group test measuring mathematics concepts, computations and applications with different levels appropriate for the different grade levels.

Stanford Diagnostic Reading Tests. Guidance Centre. Group test at three levels to identify strengths and weaknesses in reading comprehension, vocabulary, syllabication, auditory skills, phonetic analysis and rate of reading.

Stanford Reading Test. Guidance Centre. Group test of silent reading providing normative data in vocabulary, reading comprehension, word study skills, spelling and language.

Templin-Darley Tests of Articulation. University of Iowa Bureau of Research and Service. An individual test of the articulation of speech sounds.

Vallett Developmental Survey of Basic Learning Abilities. Fearon Publishers. A survey of skill development in several areas appropriate for children aged 2 to 7 years.

Wechsler Adult Intelligence Scale. Guidance Centre. An individually administered test providing verbal and performance tests to give a more efficient measure of intelligence of subjects from 16 to 75 years of age.

Wechsler Intelligence Scale for Children (W.I.S.C.). Guidance Centre. The W.I.S.C. and the W.I.S.C.-R. provides measure of intelligence based on tests of verbal and performance functioning of children aged 5-15.

Wechsler Preschool and Primary Scale of Intelligence (W.P.P.S.I.). Guidance Centre. A test to be individually administered to children ranging in age from 4 to 6½ years, providing a measure of intelligence based on five verbal and five performance tests.

Wepman Test of Auditory Discrimination. Language Research Associates. An individually administered tests of auditory discrimination of speech sounds. (Ages 5-8).

Wepman Auditory Memory Span Test. Language Research Associates. A test to assess the level of development of the ability to retain and recall familiar isolated words. Designed for children ages 5-8.

Wepman Auditory Sequential Memory Test. Language Research Associates. Individually administered test for assessing the ability to repeat from memory increasing series of digits in correct order. (ages 5-8)

Wide Range Achievement Test. Guidance Centre. An individually administered test of word recognition, spelling and arithmetic computation for ages 5 to adult.

LIST OF MATERIALS

There is a wide range of commercial materials available for planning instructional programs for children with learning disabilities. Only through their use can a teacher determine whether the direction and focus of a specific material serves the purpose for which it was intended. The list that follows includes materials which have been found effective by regular, remedial and special classroom teachers.

The list of materials have been arranged according to grade levels as follows:

1. Materials for teaching the young child.
2. Materials for teaching primary grade children.
3. Materials for teaching junior grade children.
4. Materials for teaching secondary level students.

---

prepared by Margaret R. Hill

8

1. MATERIALS FOR TEACHING THE YOUNG CHILD

Continental Press Readiness Materials - Continental Press Inc. Duplicating masters (or workbooks) arranged progressively to provide activities for developing each of the following areas:

Visual Motor I and II
Visual Discrimination I and II
Rhyming I and II
Independent Activities I and II
Number Skills I and II

Developing Oral Language with Young Cnildren (Murphy & O'Donnel) Educators Publishing Services. A series of six workbooks for developing speech, listening, self-image, vocabulary, perception, number concepts and motor abilities.

Distar Language I, II, III (Engelmann et al) Science Research Associates. A structured approach to language instruction for preschool to Grade 3 focusing on understanding the formal language of classroom instruction, on making statements and responding to questions, and on developing the skills and concepts necessary for subsequent writing skills.

DUSO Kit D-1 (Developing Understanding of Self and Others) (Dinkmeyer) Psycan Limited. Kit D-1 for kindergarten and lower primary provide a program of experiences and materials to encourage healthy social and emotional development.

Excel I, II (Behrmann) Educators Publishing Services. Excel I is a book of activities to develop oral expression, visual discrimination, auditory discrimination and motor coordination. Excel II focuses on the development of body image, spatial relationships, tactual acuity, left-right discrimination and rhythm.

Helping Young Children Develop Language Skills (Karnes) Council of Exceptional Children. A book of activities to develop listening skills, verbal expression, visual and auditory association and memory skills.

Launch (Early Learning) Educational Services. A handbook for teachers with suggestions and ideas for activities and games appropriate for young children.

Learning to Think Series (Thurstone) Science Research Associates. A series of four workbooks, sequenced to provide development of motor coordination, perception, reasoning, quantitative thinking, word fluency, verbal meaning, spatial thinking and memory. K-1 Red Book, Blue Book. Grade I Green Book, Gold Book.

Montessori Approach to Special Education (Gitter) Mafex Associates. A manual covering ideas, equipment description, teaching exercises and feedback methods based on the philosophy and methods of Montessori.

Peabody Language Development Kits (Dunn) Psycan Limited. 180 planned lessons in each kit to provide a variety of activities and materials for stimulating receptive, expressive, and associative linguistic skills and cognitive processes.

Level #P (mental ages 3-5)
Level #I (mental ages 4½-6½)

Wilson Initial Syntax Program (Wilson) Educators Publishing Services. 25 structured lessons to provide instruction for primary children with language deficitis, emphasizing the receptive language skills.

2. MATERIALS FOR TEACHING PRIMARY GRADE CHILDREN

Reading

Basic Reading Series. Science Research Associates. A complete reading program based on a linguistic approach which teaches letter/sound equivalents through regular pattern arrangements. A readiness level (Readiness and Alphabet Books) and 6 readers to the end of grade 2. Accompanying workbooks, spirit masters and teacher's guide are available.

Pre-reading -	Readiness book Alphabet book
Grade one -	A Pig Can Jog A Hen in a Fox's Den Six Ducks in a Pond A King on a Swing
Grade two -	Kittens and Children The Purple Truth

Distar Reading I, II and III. Science Research Associates. A program of basic reading instruction for preschool to grade 3. Each level consists of 160 carefully structured lessons to teach sound/symbol association, left-to-right sequence, oral blending, word and sentence reading.

Distar Staupbooks (Reading I) and (Reading II) and Student Readers (Reading III).

Distar Library Series. Stories to provide independent work correlated by lesson with the Distar Reading Program.

Individualized Reading Skills Program. Science Research Associates. (Gibb and Talpiarnen) Primary level. A set of four readers to consolidate and reinforce basic reading skills, phonetic analysis, structural analysis, use of context clues and literal comprehension. Reading level 2.0 to 3.5

Gilligan Milligan
Risky Red
Strawberry Emergency
Sky Diver

Language Patterns Library (Linn, editor) Holt Rinehart. A series of illustrated readers to reinforce phonetic principles and patterns taught in the regular Language Patterns Program.

Merrill Linguistic Readers. Charles E. Merrill. A series of readers based on a linguistic approach to reading instruction for primary level students. Workbooks and teacher's manuals are also available.

I Can
Dig In
Catch On

Miami Linguistic Readers (Robinett, Bell & Rojas) D.C. Heath and Co. A set of 10 readers for grade one and 10 readers for grade two based on a linguistic approach to reading instruction. Three plateau levels for each grade provide consolidation and reinforcement of skills already taught. Workbooks and teacher's manuals are also available.

Grade I
Biff and Tiff
Kid Kit and the Catfish
Nat the Rat
Tug Duck and Buzz Bug
The Sack Hut
On the Rock on the Pond
The Picnic Skip
Hot Corn Muffins
The Camping Trip
The Magic Bean

Primary Phonics (Makar) Educators Publishing Services Inc. A carefully structured phonetic approach to the teaching of reading for kindergarten to grade 4, organized into six workbooks with 10 storybooks for each workbook.

Grade I
Workbook I
Mac and Tab
Al
Tim
The Jet
Ben Bug
Ed
Meg
Ted
The Wig

Programmed Reading (Sullivan Associates) McGraw-Hill. A series of programmed text-workbooks and accompanying readers for grades 1-3.

Series I Text-workbooks	Readers
Book I	Pins and Pans
Book II	The Bag in the Sand
Book III	The Red Mitten
Book IV	The Watch and the Bat
Book V	Pick a Pet
Book VI	Jars and Jars of Jam
Book VII	The Starship

Sullivan Reading Program (M.W. Sullivan) Behavioral Research Laboratorie. A series of programmed workbooks with storybooks correlated with the text-workbooks. There are three parallel storybooks (e.g. 1, 1A, 1B) which provide consolidation and reinforcement of the same skills taught in Text-workbook I, Series I.

Dolch Games. Paper Words - Sets One and Two
Sight Word Game
Take

Phonics

Phonics We Use. Lyons and Carhahan. A series of graded phonic workbooks A, B, C, D. (Primary Level)

Phonetic Keys to Reading - Economy Company. A phonic approach to the teaching of reading which includes books, cards and charts.

Primary Phonics (Makar) Educators Publishing Service. Workbooks I, II, III, IV, IV to provide ample practice in sound/symbol association, sound blending and word recognition.

Reading with Phonics (Hay & Wings) Lippincutt. A system of teaching reading through games emphasizing the integration of auditory and visual elements - matching sound and sight.

Recipe for Reading (Fraub) Educators Publishing Service. An excellent manual for teaching basic reading skills accompanied by 21 storybooks (The Alphabet Series) coordinated lesson by lesson for use with Recipe for Reading.

Remedial Reading Drills (Hegge, Kirk and Kirk) George Wahr Publishing. A book of structural exercises to develop accurate sound/symbol assocaition, sound blending and word recognition skills.

Stories from Sounds (Hewetson) Educators Publishing Service. 25 storybooks based on sound/symbol approach to reading, for use by classroom, remedial or special education teachers.

Dolch Games - Phonic Rummy
Group Sounding Game

Spelling

A Spelling Workbook for early Primary Corrective Work. Books I, IA, II. Educators Publishing Service.

Workbook designed to teach spelling through emphasizing their phonetic elements. Books I and IA are for second grade, Book II for third grade.

Word Family Spellers. A series of graded spellers designed to teach spelling according to regular spelling patterns.

Words and Patterns - Science Research Associates. A sequenced semi-programmed spelling program emphasizing the spelling patterns within our language, in hardbound or consumable form.

Grade I - Readiness (softbound)
Grade II - Textbook (hard or soft bound)

Mathematics

Arithmetic Step by Step - Continental Press. Preprinted duplicating masters to provide ample practice in the basic arithmetic facts taught in grades 1 to 3.

Arithmo Kits - Nelson & Sons. Card games for 2 to 6 players designed to reinforce basic math skills. Arcal I - recommended for grades 1 and 2 to provide practice in addition and subtraction.

Deal Me In (Galick) Card games designed not only to reinforce math skills but to develop thinking skills.

Distar Arithmetic. A structured and thoroughly organized program of 160 lessons at each level to explain how to teach each task and to give ample practice to develop mastery.

PLUS - Educational Services. A handbook for games, ideas and activities to assist the teacher of arithmetic.

Handwriting

Learning to Write, Books I and II (Durbrow) Educators Publishing Service. Exercises in Book I are designed to develop five motor skills and specific motor patterns required for writing. Book II includes a program for teaching cursive writing.

Building handwriting skills in dyslexic children (Arend) Academic Therapy. A book of suggested procedures and ideas for developing the skills necessary for writing with ease and fluency.

3. MATERIALS FOR TEACHING JUNIOR GRADE CHILDREN

Reading

Corrective Reading Program. Science Research Associates. A carefully programmed and sequenced series of lessons to help poor readers (grades 4 to adult) develop consistent decoding strategies.

S.R.A. Corrective Reading 1978 edition - Science Research Associates. A remedial program for students in grades 4 to adult, based on the principles of direct instruction to teach decoding (word attach, decoding strategies, skill applications) and comprehension (thinking basics, comprehensive skills, concept applications).

Cracking the Code - Science Research Associates. A reading program for students in grades 4-9 who have not mastered basic reading skills and are at a beginning reading level. Components are a student reader, student workbook and teacher's guide.

Gates - Peardon Reading Exercises - Guidance Centre. Reusable booklets containing short reading exercises to develop reading skills and followed by questions that relate to the skills stressed in the exercises. There are five different levels ranging in difficulty from grades 1-8. (Introductory 1-3; Preparatory 2-4; Elementary 3-5; Intermediate 4-7; Advanced 5-8.)

Individualized Reading Skills Program - Science Research Associates. A program aimed at developing reading comprehension and word study skills for grades 3-8.

MacMillan Reading Spectrum - MacMillan Publishing Co. Programmed booklets arranged progressively with a series directed to developing word analysis skills, another series for vocabulary development and another for reading comprehension.

McCall - Crabbs Standard Test Lessons in Reading - Guidance Centre. Reusable booklets of 78 lessons each, consisting of stories and multiple choice questions designed to develop reading speed as well as Comprehension. Exercises range in difficulty from grade 2 to 12 (Book A 2-4; Book B 3-5; Book C 4-6; Book D 5-7; Book E 6-12).

Merrill Linguistic Readers - Charles E. Merrill. A linguistic approach to reading instruction. The adult program is very basic but is packaged in a form more acceptable to older students.

New Practice Readers - McGraw-Hill. High interest readers ranging from grade 2 level (Book A) to grade 8 level (Book G). Effectively laid out to review new vocabulary for each story to be read, with questions to improve specific skills such as noting details, noticing implied details, etc.

Programmed Reading - McGraw-Hill. Programmed test-workbooks for independent or individualized instruction.

Reading Aids Through The Grades - Guidance Centre. Contains 440 activities for teaching reading, divided into three major sections; Reading Readiness, Beginning Reading and Advanced Reading Skills.

Reading Skill Builders - Reader's Digest Services. A series of readers in magazine format with short reading selections and accompanying comprehension questions. Levels range from grade 1 to adult.

Remedial Reading Drills - George Wohr Publishing Co. Exercises to develop mastery in phonics and word recognition.

R.R. Remedial Reading - Modern Curriculum Press. A workbook for basic phonic and word analysis skills for use with older students.

Rescue - Educational Services Inc. A handbook of remedial reading techniques for the classroom teacher.

Sullivan Reading Program (W.M. Sullivan) Behavioral Research Laboratories. Programmed textbooks for individual or remedial or independent study.

Phonics

A First Course in Phonic Reading - Educators Publishing Service. Provides a basic foundation in phonics. Written for second and third grade, but appropriate for older readers.

A Second Course in Phonic Reading, Book I - Educators Publishing Service. A complete course of phonic instructions at the fourth and fifth grade levels.

A Second Course in Phonic Reading - Book II. Educators Publishing Service. Devoted to developing comprehension and vocabulary skills, Book II provides extensive practice with homonyms, synonyms and antonyms, and exercises to teach the meanings of words in context.

Recipe for Reading - Educators Publishing Service. A 224 pages manual to teach basic reading skills which although designed for primary grades may be used for tutorial or remedial with children lacking reading skills.

Spelling

A Spelling Workbook for Corrective Drill for Elementary Grades. Educators Publishing Service. A collection of lessons for grades 4, 5 and 6 aimed at developing mastery of basic spelling generalization.

Basic Spelling - Education Publishing Service. A spelling workbook emphasizing sound-letter relationships and predictable spelling patterns. Useful as an independent text for middle grades.

Building Spelling Skills in Dyslexic Children - Academic Therapy, a booklet of ideas, tricks, etc. to help dyslexic children develop spelling competence.

Morphagraphic Spelling - Science Research Associate, a direct instructional spelling program which teaches the spelling of morphographs (units of meaning) and the rules of combining them.

Teaching Spelling (Thomas) - A systematic approach which has had proven results.

Words and Patterns - Science Research Associates. Semiprogrammed spelling workbooks with words organized in three colour coded groups to indicate those words having regular spelling, those with more than one spelling and others that must be memorized. Books 4, 5 and 6 for the corresponding grades.

Mathematics

Building Number Skills in Dyslexic Children - Academic Therapy, a booklet of ideas for helping children who have difficulty with math.

Challenge - Educational Sciences. A handbook for teachers of mathematics at the grade 4 to 8 level. Duplicating masters at two levels (4-6) and (6-8) are available to accompany the handbook.

Writing

Type It - Educators Publishing Service, a manual, designed specifically for students with writing difficulties, to teach touch typing.

Typing Keys for the Remediation of Reading and Spelling - Academic Therapy. A manual to teach the student with difficulties in handwriting how to develop typing skills.

4. MATERIALS FOR TEACHING SECONDARY LEVEL STUDENTS

Reading

Advanced Reading Skills - Reader's Digest. Magazine format of short stories (reading level grade 4-8).

Be a Better Reader - Prentice-Hall. Workbook type text designed to improve reading in the content areas - appropriate for grade 4 to junior high school.

Breakthrough - Allyn and Bacon. Short studies with high interest appeal, and reading levels ranging from grade 3 to grade 6.

Contact - Scholastic Book Services. Anthologies for secondary school students with a reading level grade 4 to 6.

Reading for Understanding - Science Research Associates. An individualized reading program in three editions ranging from grade 3 reading level to college level. The program is designed to improve comprehension.

Scope Skills - Scholastic Book Services. A series of high interest, low reading level workbooks aimed at developing language, study and word skills.

Scope Skills Visuals - Scholastic Book Services. Books to help students read maps, charts, tables, etc.

Specific Skills Series - Barnell-Loft. Exercise books to provide practice in following directions, locating the main idea, drawing conclusions, getting the facts, using context, etc. for grades 1-8. Suggested use for secondary level would be Level D through advanced.

Thinklab - Science Research Associates. Kits (Thinklab and Thinklab 2) aimed at developing reading and thinking skills through a wide variety of challenges that attract the unmotivated student (reading level 4 up).

Tapliner Series - MacMillan of Canada. Series of short novels of high interest level and low reading vocabulary level.

Troubleshooter - Houghton-Mifflin. A series of eight workbooks, each designed to develop one specific language skills, e.g. the sentence, spelling, etc., a teacher's edition is available.

Spelling

A Spelling Workbook Emphasizing Rules and Generalizations for Corrective Drill. Educators Publishing Service. For students in grades 7 through 12 who have reading difficulties and associated spelling weaknesses.

Morphographic Spelling - Science Research Associates. A direct instructional program of 140 lessons which teaches students the spelling of morphagraphs (units of meaning and how they are combined).

Spellbound - Educators Publishing Service. A remedial spelling workbook for students in junior or senior high school.

The Spell of Words - Educators Publishing Service. A spelling workbook for high school students and adults who have severe spelling difficulties.

Winston Dictionary of Canadian English - Holt, Rhinehart & Winston. Available in elementary and intermediate editions.

Word Study I and II - Science Research Associates. Semiprogrammed workbooks for grades 7 to 9 which review spelling patterns as well as provide information on word origin, synonyms, homonyms and antonyms, etc.

Mathematics

Spectrum Mathematics - Ludlow Brothers (Doubleday). A series of colour coded books ranging from grades 3 to grade 8.

GLOSSARY OF TERMS

AGNOSIA - not knowing; inability to interpret sensory impressions; loss of ability to recognize and identify familiar objects, events and sensations.

ALEXIA - loss of ability to read because of some brain damage such as a cerebral stroke.

AMBIDEXTROUS - ability to use both right and left hands equally well.

ANOMIA - difficulty remembering or recalling words or names.

ANOXIA - failure of tissue to receive or utilize an adequate amount of oxygen.

APHASIA - loss or impairment of the ability to use language, to understand, to manipulate or express words in speech, writing or signs.

APRAXIA - difficulty in or loss of the ability to perform purposeful movements.

AUDING - listening, recognizing and comprehending spoken language.

AUDIOMETER - a hearing screening device.

AUDITORY ACUITY - the sharpness of one's hearing.

AUDITORY BLENDING - the ability to synthesize the phonemes of a word into a whole word when the phonemes are pronounced with slight separation.

AUDITORY DISCRIMINATION - the ability to distinguish slight differences in sounds.

AUDITORY PERCEPTION - ability to receive, to organize and interpret sensory data received through the ears.

AUTISM - a severe disorder in infants and children characterized by a severe distrubance of the ability to communicate in social interaction.

---

prepared by Margaret R. Hill

BASAL READER APPROACH - a method of teaching reading in which a series of basal readers are used to provide daily systematic instruction in reading.

BASIC SIGHT VOCABULARY - a list of 220 words compiled by Dolch which are said to make up 50 to 75 percent of all running words in primary reading.

BEHAVIOUR MODIFICATION - a technique of changing behaviour based on the theory of operant behaviour and conditioning.

BINOCULAR - pertaining to seeing with both eyes in focus together.

BODY IMAGE - an awareness or mental representation of one's own body and the relationship of the parts of the body to each other and to the outside environment.

BRAIN DAMAGE - any structural injury or insult ot the brain, whether by surgery, accident or disease.

B.V.M.G.T. - Bender Visual Motor Gestalt Test.

CAPACITY LEVEL - applied to that level of reading at which the child understands what is read or said with good comprehension and with attention to supporting facts and details.

CENTRAL NERVOUS SYSTEM - the brain, the spinal cord and sensory and motor peripheral nerves. Shortened to C.N.S.

CEREBRAL DOMINANCE - the tendency for one cerebral hemisphere to be better developed and consistently dominant over the other. In most individuals the left side of the brain controls language functioning and is considered the dominant hemisphere.

CHRONOLOGICAL AGE - the number of years a person has lived.

CLINICAL TEACHING - an approach to teaching that attempts to match the learning experiences to the child's needs recognizing the child's strengths and weaknesses and the child's unique learning style.

CLOSED SYLLABLE - a syllable that ends in a consonant.

CLOSURE - the ability to recognize a whole when one or more parts is missing or when the continuity is interrupted.

CLOZE PROCEDURE - a technique used in testing and teaching reading, which involves the deletion of words from the text and learning blank spaces.

CONCEPT - an abstract idea generalized from particular instances.

CONCEPTUAL DISORDERS - a disturbance in the thinking process and in the ability to form concepts.

CONFIGURATION - the general shape of a word.

CONSONANT - a sound which cannot easily be sounded alone.

CORRECTIVE READING - reading instruction designed for children experiencing minor difficulties on reading.

CORRELATION - the fact that two things or variables are so related that a change in one is accompanied by a corresponding or parallel change in the other.

CROSS-MODALITY PERCEPTION - the neurological process of converting information received through one modality to another modality.

DECODING - translating from an unfamiliar to familiar set of symbols or language.

DEVELOPMENTAL READING - the pattern and sequence of normal reading growth.

DIGRAPH - two letters representing one sound.

DIPHTHONG - a blend of two vowels representing a composite speech sound.

DIRECTIONALITY - the projection of laterality to the external environment, the knowledge of left and right and space.

DISCRIMINATION - the process of detecting differences.

DISINHIBITION - the lack of ability to restrain oneself from responding to distracting stimuli.

DISSOCIATION - the inability to see things as a whole; the tendency to respond to a stimillus in term of parts or segments.

DISTRACTIBILITY - the inability to give normal attention to the events and circumstances that surround one; the tendency for one's attention to be easily drawn to extraneous stimuli.

D.T.L.A. - abbreviation for Detroit Test of Learning Aptitudes.

D.T.V.M.I. - abbreviation for Developmental Test of Visual Motor Integration (Beery-Babtenica).

D.T.V.P. - abbreviation for Developmental Test of Visual Perception (Frostig).

DYSARTHIA - disorder in motor speech; a paralytic condition that affects speech production and articulation.

DYSCALCULIA - an impairment in the ability to do arithmetic or to work with numbers.

DYSGRAPHIA - the impairment of the ability to express ideas in writing or by means of written symbols; inability to transduce visual information to the motor system.

DYSLEXIA - impairment in the ability to read or to understand what one reads silently or aloud.

DYSNOMIA - impairment in the ability to recall a word or name at will.

ECHOLALIA - the parrot-like repetition of sounds, words, phrases or sentences without any understanding of the meaning.

EDUCABLY MENTALLY RETARDED - an individual with an I.Q. between 50 and 75.

ELECTROENCEPHALOGRAPH - brain wave tracing; E.E.G.

EMOTIONAL LABILITY - the tendency to sudden and unexplainable shifts in behaviour from one emotion to another.

ETIOLOGY - the cause or origin of a condition.

EXPERIENCE APPROACH - the use of the child's own day-to-day experiences as subject matter for teaching reading.

EXPRESSIVE LANGUAGE SKILLS - the skills required to produce language as a means of communication. Speaking and writing are expressive language skills.

FERNALD TECHNIQUE - a multisensory method of teaching reading, writing, and spelling; learning a word as a whole pattern by tracing the entire word several times as it is said or spelled, then writing it from memory.

FINGER DIFFERENTIATION - ability to identify which fingers have been touched either simultaneously or in sequence.

FIGURE-GROUND PERCEPTION - the ability to attend to one aspect of the visual field while perceiving it in relation to the rest of the field.

FIXATION - the pause of the eye in reading.

FLASHMETER - a device for timed and rapid exposure of items.

FORM CONSTANCY PERCEPTION - the ability to perceive that an object possesses invariant properties such as shape, size, position, in spite of the variability of the impression on the senses of the observer.

FRUSTRATION LEVEL - the lowest level of readability. The material is too difficult, pronunciation and accuracy are less than 90 percent and comprehension is less then 50 percent.

GERTSMANN SYNDROME - a disorder of cerebral function characterized by lack of laterality, disturbance of body-image, right-left disorientation, finger agnosia, dysgraphia, dyscalculia.

GESTALT - a term used to express a form, a configuration or a totality, that has properties which cannot be derived by adding the parts and their relationships.

GILLINGHAM METHOD - a multisensory approach to learning the individual letter sounds and blending; the method emphasizes phonics and a highly structured sequence of learning.

GRAPHEME - a written or printed language symbol that represents an oral language code.

HAND-EYE COORDINATION - the ability of the hand and eye to perform easily together.

HAPTIC PERCEPTION - interpretation of information received through two modalities-tactile (sense of touch via the fingers) and kinesthetic (body movements and muscle feeling).

HEMISPHERIC DOMINANCE - the fact that one cerebral hemisphere generally leads the other in control of body movements, resulting in preferred use of left or right.

HOMOLATERAL - occurring on the same side of the body.

HYPERACTIVITY - excessive activity.

HYPERKINESIS - constant and excessive movement and motor activity either in random or purposeful actions.

HYPOACTIVITY - extreme lack of movement; pronounced absence of physical activity.

IMPULSIVITY - the tendency to act on impulse without considering the consequences of an action.

INDEPENDENT LEVEL - the level of readability at which a child can read without assistance and with good comprehension; comprehension 90 percent, pronunciation 99 percent.

INDIVIDUALIZED READING - method of teaching reading whereby the instruction is structured through the child's selection of materials, activities and interests.

INNER LANGUAGE - the process of internalizing experiences without the use of spoken symbols; the language with which one thinks

INSTRUCTIONAL LEVEL - the level at which reading should be taught, challenging yet not too difficult; comprehension 75 percent, pronunciation 95 percent.

I.R.I. - abbreviation for informal reading inventory.

I.T.A. - initial teaching alphabet.

I.T.P.A. - Illinois Test of Psycholinguistic Abilities.

KINESTHETIC - pertaining to the sensation of movement or strain in muscles, tendons or joints.

KINESTHETIC METHOD - a method of using muscular movement to supplement visual and auditory stimuli.

LATERALITY - sidedness; the awareness of the two sides of the body, left and right; the preferential use of one side of the body.

LEARNING DISABILITY - disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language.

LINGUISTICS - the study of human speech including the origin, modification and structure of language.

MAINSTREAMING - placing children with handicaps within the regular education system, particularly in the regular classroom.

MATURATIONAL LAG - delayed development of areas of the brain; lag signifies irregularity in the developmental pattern without a structural defect, deficiency or loss.

MINIMAL BRAIN DYSFUNCTION (M.B.D.) - subtle deviant functions of the central nervous system which are associated with learning and/or behavioural abnormalities in the child of near average, average or above average intelligence.

MIRROR WRITING - the term applied to writing which is completely reversed in letters and form.

MIXED CEREBRAL DOMINANCE - the tendency to show no preference for either left or right; one cerebral hemisphere does not consistently lead the other or control body movements.

MNEMONICS - the use of clues or devices to improve memory.

MODALITY - the pathways through which one receives information; modality preference refers to the fact that an individual receives information better through one modality than another.

NEUROPSYCHOLOGY - the mental or cognitional aspects of the functioning of the central nervous system.

OCULAR PURSUIT - visually following a moving target.

OPEN SYLLABLE - a syllable which ends in a vowel.

OVERLEARNING - learning to the point where the response is automatic.

PATTERNING - a theory developed by DOMAN and DELACATO, of achieving neurological organization through a series of prescribed activities that will improve neurological development and thereby eliminate or prevent learning disorders.

P.I.A.T. - Peabody Individual Achievement Test.

P.P.V.T. - Peabody Picture Vocabulary Test.

PERCENTILE - for a given score the percentile indicates the percentage of subjects tested ranking below that score in the distribution.

PERCEPTION - the interpretation of sensory information; the process of recognizing and making sense out of sensory stimulation.

PERCEPTUAL-MOTOR - the interaction between the various channels of perception and motor activity.

PERCEPTUALLY HANDICAPPED - a term applied to an individual who has difficulty in learning because of a disturbance or disorder in perception of sensory stimulation.

PERINATAL - around the time of birth.

PERSEVERATION - continuing to behave or to respond in a certain way in spite of it being no longer appropriate; the inability to shift from one activity to another.

PHONEME - the smallest unit of speech sound in a particular language.

PHONETIC - of or pertaining to speech sounds and their production.

PHONICS - the application of phonetics to the teaching of reading.

PHONOGRAM - a letter or combination of letters representing one speech sound.

POSITION IN SPACE - the perception of the size and the position of an object in relation to the observer.

PRECISION TEACHING - a technique of teaching which emphasizes rate of improvement; performance is charted to show frequency of occurrence and to show rate of change.

PRIMARY READING DISABILITY - a difficulty in learning to read due to a variety of factors such as inadequate perceptual development, directional disturbance, maturational lag, genetically determined defect.

PROGRAMMED INSTRUCTION - materials designed to be self-instructional and self-corrective; subject matter is presented in small, discrete, sequential steps containing a single question or instruction.

READABILITY - a measure of the difficulty of any printed material in terms of the grade level at which it might be expected to be read successfully.

REVERSAL - the right-left transposition of a letter or of letters in a word (b for d; was for saw).

RIGHT-LEFT DISORIENTATION - inability to distinguish right from left, having no inner awareness of right-left directions.

ROTATION - the turning around of a letter (d for p; u for n; w for m).

ROTE MEMORY - reproduction of learned material without respect for meaning.

SCHOOL PHOBIA - an irrational fear or aversion to attending school.

SENSORY-MOTOR - combination of sensory input and motor output; the motor activity reflects what takes place in the sensory system.

SEQUENCE - serial order where one item follows another.

SOCIAL PERCEPTION - the ability to interpret the social environment and to respond appropriately within the social situation.

SOFT NEUROLOGICAL SIGNS - abnormalities that are mild, slight and hard to detect as contrasted with gross or more obvious neurological abnormalities.

SPATIAL ORIENTATION - awareness at all times of one's position in relation to the outside world as it is perceived.

SPATIAL RELATIONSHIPS - perceiving the position of two or more objects in relation to each other.

SPECIFIC LANGUAGE DISABILITY - a term applied to those who are otherwise intelligent but have difficulty with all aspects of language including reading, writing, spelling and speaking.

STRUCTURAL ANALYSIS - a method of word study based on recognizing how the word is put together; usually involves inflected forms, syllabication and compound words.

SYLLABICATION - breaking the word into its appropriate syllables.

TACHISTOSCOPE - a machine that exposes written or printed material for a short period of time; practice with tachistoscope is designed to improve the rate and span of visual perception of words.

TACTILE PERCEPTION - receiving and interpreting sensory stimuli experienced through the sense of touch.

TASK ANALYSIS - examining a particular task to discover the elements it comprises and the processes required to perform it.

V.A.K.T. - refers to multisensory methods of teaching which involve visual, auditory, kinesthetic and tactile modalities.

VISUAL ACUITY - the sharpness of vision (one's eyesight).

VISUAL DISCRIMINATION - the ability to visually discern likenesses and differences.

VISUAL-MOTOR COORDINATION - the ability to coordinate vision with the movements of the body and parts of the body.

VISUAL PERCEPTION - the ability to recognize and discriminate between visual stimuli and to interpret those stimuli by associating them with previous experiences.

VOWEL - a speech sound which can easily be sounded alone.

W.I.S.C. - Wichsler Intelligence Scale for Children.

WISC-R - Wichsler Intelligence Scale for Children - Revissed.

WORD ATTACK SKILLS - the ability to analyse unfamiliar words by phonic elements, by syllables, by structural analysis in order to arrive at their pronunciation and possibly meaning.

WPPSI - Wichsler Preschool and Primary Scale of Intelligence.

WRAT - Wide Range Achievement Test.

References for Glossary

Frostig & Maslow, Learning problems in the classroom, Boston; Grune and Stratton, 1973.

Hallahan, D. & Cruickshank, W., Psychoeducational foundation of learning disabilities, Englewood Cliffs; Prentice Hall Inc., 1973.

Johnson, D. & Myklebust, H., Learning disabilities: educational principles and practices, New York; Grune & Stratton, 1967.

Kaluger, G. & Kolson, C., Reading and learning disabilities, Columbus; Chalres E. Merrill, 1969.

Lerner, J., Children with learning disabilities, 2nd edition, Boston; Houghton-Mifflin Co., 1976.

Money, J. (ed.), The disabled reader, Baltimore; Johns Hopkins Press, 1966.

Otto, McMenemy & Smith, Corrective and remedial teaching, Boston; Houghton-Mifflin Co., 1973.